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A Paper
ON
SLEEP AND ITS DISORDERS IN CHILDHOOD.*

BY
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Of the physiology of sleep we know no more than of its pathology. Speculations as to its nature, what part is played by variations in vascularity, in blood pressure, or in osmotic pressure, whether or not there exists a sleep centre, acted upon by a hypnotoxin elaborated during the hours of wakefulness, how far the endocrine glands control the process—all such speculations afford us no help in solving the problems of sleep and its disorders in childhood.

In our discussion, therefore, we can only approach the subject with certainty from the purely clinical standpoint. We can only depict disturbances as we find them in practice, and discuss the ways and means whereby they may be combated. Views on etiology must be regarded as wholly speculative. I propose to discuss briefly in turn four examples of such disturbances.

1. Sleeplessness and continuous crying in young infants.
2. Sleeplessness in older children.
3. Night terrors.
4. Enuresis.

Sleeplessness in Young Infants.

Three factors may be concerned in different cases in varying degree in producing this most unhappy state: (*a*) pain or discomfort, (*b*) inherited or constitutional neuropathy, (*c*) faulty management.

Pain or Discomfort.

In a few cases the unrest is caused by persistent pain. Syphilitic periostitis, the subperiosteal haemorrhages of scurvy, uric acid calculi, otitis media, for example, must not be overlooked. The pains of dyspepsia are a more common cause. In intestinal colic the pain is caused by the increased vigour of the peristaltic contractions of the intestine, and is associated with the passage of a green, watery, or slimy stool, which is expelled violently from the anus with the audible escape of flatus and fluid, and which may be so irritating that it causes excoriation of the skin of the buttocks. Aerophagy with distension of the stomach is an even more common cause of abdominal discomfort. But here, as so often happens in infancy, cause and effect are hard to separate, and we are confronted with a vicious circle of symptoms, each productive of the other. The infant, in the first months of life, functions almost solely as a suction apparatus. That apparatus is effective only when the child is at rest, quiet, perhaps even drowsy. The suction act is not a voluntary but a reflex act, and the reflex is inhibited by emotional unrest. Brought to the breast sleepless, crying, and excited, the child, as it were, stammers in its attempt at suction. It substitutes a voluntary, inco-ordinate, ineffective effort for the quiet, sustained, effective suction. Gulping, straining, and choking, it secures from the breast a minimum of milk and a maximum of air. The consequent distension of the stomach is painful. The delayed peristaltic contraction of the fundus—a property of the infant's stomach which expels that amount of air which is always and inevitably swallowed with the milk—is incapable of achieving its purpose. Either eructation is prevented by the over-distension, or eructation is so violent that the fluid contents of the stomach are ejected as well as the air. To prevent "wind" we must secure sleep; to secure sleep we must prevent "wind." The infant must be brought to the breast quiet and controlled, not in a state of emotional excitement. A single grain of chloral hydrate, given ten minutes before each of five or six feeds, for some days, will often prevent wind. When the infant is quiet and drowsy the suction reflex comes into its own again; a full meal is taken without too great aerophagy, and sound sleep follows.

Nasal obstruction from nasal catarrh is one of the most frequent causes of discomfort leading to wakefulness. Not only does the cough constantly waken the child, but the consequent nasal obstruction interferes with suction. The infant must stop breathing in order to suck, must stop sucking in order to breathe. Aerophagy and insufficient stimulation of the breast are direct results of nasal obstruction. The two commonest causes for a failure of lactation in the first months are to be found in nervous unrest in the infant, leading to inco-ordinate ineffective suction, and to nasal obstruction in the infant, which in turn is a cause of nervous unrest. A tampon of cotton-wool, which allows a few drops of adrenaline solution (1 in 5,000) to flow backwards through the nostrils before the child is put to the breast, may break the vicious circle, permit nasal breathing and effective suction, and thereby prevent aerophagy and hunger, with the consequent insomnia and crying.

Inherited Neuropathy.

The neuropathic infant generally bears in his face and aspect the stamp of his inheritance—thin, meagre, and tense, with rigid face and limbs. His hands are constantly clenched; often there is opisthotonos. The outline of the recti abdominis is visible on the retracted abdomen. The scalp is usually hairy, and the hair is lank and dark, generally massed on the vertex, thin and sparse on the temples. The slightest sound in the neighbourhood awakes him with a characteristic start. Instantly the anxious expression flows back into his face, and the inevitable crying begins. The response to the approach of a friendly face is not a smile, but a cry or a frown.

Faulty Management.

Only a few restless babies suffer from inherited neuropathy. Most infants who are sleepless and who cry constantly without any specific pain or discomfort do so because the management is at fault. The competence of a mother in handling her infant varies directly with the degree of her own self-confidence. It is through the mother or the nurse that we must work to get our effects. No infant lies quiet in the arms of a woman who is herself in a state of nervous tension. In hospitals and institutions infants sleep all the time, because they are subjected to little, perhaps to too little, psychical stimulation. They are cared for by a succession of kindly, capable young women, who are not apt to be unduly distressed by the crying of a child. In an institution the baby does not pass his time under the searchlight of his mother's face and eyes, with a constant interplay between the two—coaxing, appealing, consoling, urging, on the part of the mother—straining, striving, refusing, resisting, on the part of the child. This excessive psychical stimulus may be the cause of a restless state of fatigue. Insomnia and constant crying may follow and become persistent when the mother grows agitated and worried by the failure of her renewed attempts to dominate the opposition of the child. The best place for such an infant may be up against the mother's back, against a warm, comfortable part of her body, which takes no part in the expression of her emotions, when the searchlight of face and eyes is directed away from the child, and when her hands are free to busy themselves in occupations which divert her thoughts from the child. For when her thoughts are so diverted, peace may come, almost miraculously. The mother's agitation and the infant's restlessness may act and react upon each other in such a way that treatment, if it is to be successful, must have regard to both aspects of the problem.

Chloral is, I believe, the most effective and the most satisfactory hypnotic in infancy. A prolonged hot bath or a hot pack is often as helpful for the restless infant as it is for the adult, who in a state of acute maniacal excitement may show symptoms not dissimilar. The

* Read in opening a discussion in the Section of Diseases of Children at the Annual Meeting of the British Medical Association, Winnipeg, 1930.

swaddling-clothes, too, with which primitive folk in all countries and all ages have encumbered the young infant are the infantile strait-waistcoat. When enveloped in the steady pressure of a light and porous shawl, so that, like Wordsworth's cloud "it moveth altogether, if it move at all," many a restless infant will fall soundly asleep. The practice of carrying an infant always upon a supporting pillow has this, perhaps, to explain its popularity—that the pillow serves to insulate the tense nervous system of the agitated mother from that of the child, and prevents the incessant struggle between the restless movements of the child and the restraining hold of the mother.

Sleeplessness in Older Children.

In older children sleep is often still intimately dependent upon the support which the child derives or fails to derive from the mother. Many nervous children will sleep only in the presence of the mother. The so-called "calling out," a persistent hailing of the mother, as soon as the light is turned out and the child is left alone, is caused by the effect upon the child of the ill-concealed agitation in the mother. The parents of children who cry incessantly are apt to be sensitive persons who are unnecessarily disturbed by the cry. Many children, like moths to the candle, are compelled to exploit these emotional reactions in their parents. Refusal of food and refusal of sleep have here the same origin.

To urge a child to go to sleep is only to call attention to his own impotence in the matter. No one can go to sleep by an effort of will, and the sense of this inability is a main cause of all insomnia. A conscious effort to achieve sleep prevents sleep. On the other hand, to speak before a child of his remarkable capacity for immediate and sound sleep, to encourage the tendency natural to many children to associate sleep with certain treasured objects—the disreputable remains, perhaps, of what was once a teddy bear—to lay stress upon improvement, to make light of occasional wakefulness, is to provide helpful management. All children are at times wakeful, at times refuse food, at times wet the bed, but whether these failures are transitory and of no importance, or whether they are erected into formidable disorders, depends more than anything else upon the mother and her power to hide her own anxiety. It is the mother bird that by its warning note arouses the sense of fear and of danger in her young. Comfortable, easy-going persons, who always hope for the best, seldom find their children refusing either to eat or to sleep. There are many other points of management on the importance of which we are all agreed, but which time will not allow me to deal with. The need for adequate ventilation and for warmth can hardly be overstressed. A heavy and indigestible meal taken late at night has caused many a sleepless night. Lack of exercise no less than fatigue may cause insomnia. In a given case we must review all the circumstances of the child's life and search for the contributory causes.

The Unstable Metabolism of the Nervous Child.

But when I turn from a consideration of the important part which management plays and examine the causes of insomnia which are peculiar to the child himself, I find myself on more debatable ground. One particular aspect of the sleep question in older children I should like to deal with in some detail, because it concerns very intimately, I think, the consideration of those particular disorders of which I am to speak—namely, night terrors and enuresis.

The metabolism of all children, just because they are children, is less stable than that of later life. In some nervous children this instability is a characteristic and striking peculiarity. It is not that there is any abnormality peculiar to the nervous child, but rather that biochemical reactions common to all and which do not overstep normal limits may be provocative of symptoms of great and sometimes of alarming severity.

Biochemists tell us that all the energy expended both upon muscular exertion and upon the activities of our emotional life is derived primarily from the burning of carbohydrate. In children, starvation, pyrexia, exertion, and emotional excitement, whether pleasurable or painful, tend much more readily than in adults to exhaust that meagre reserve of carbohydrate which is stored as glycogen partly in the liver and partly in the muscles. In the absence of sufficient available carbohydrate, the metabolism is apt to become disturbed, and the evidence of this disturbance is found in a fall in the blood sugar, in an accumulation of ketone bodies in the blood, in a greater excretion of nitrogen, and in an increased accumulation of fat with a diminished content of glycogen in the liver. When the carbohydrate level is at the lowest end of the range the body appears to endeavour to achieve the synthesis of sugar out of the ample store of body fat, which is our main reserve of energy. It is a view widely held at the present time that the presence of ketone bodies in the blood in considerable amounts indicates the failure of such an attempt. Some sugar is indeed successfully derived from fat, but much of the synthesis is incomplete, and remains, as it were, at the stage of the ketone bodies. Ketonaemia, in other words, may perhaps be regarded as evidence of a failure to complete the synthesis of the necessary sugar from the stored body fat.

Individual children differ widely in their reaction to the presence of ketone bodies in the blood and to the accompanying hypoglycaemia. The nervous child, slender, thin, and pale, with his eager or too anxious expression, with a tendency to "bouts" or "turns" or "attacks," sometimes characterized by severe and incessant vomiting, but more often merely by an increased restlessness, irritability, and exhaustion, by obscure pyrexia, by anorexia, or nausea, by yawning, pallor, and a variety of vague muscular aches and pains, as well as by confused or terror-stricken dreams, has, as has long been recognized, a low tolerance for fat. It is, I think, clear from a clinical study of such cases that these sudden backslidings in physical energy and nervous control, associated often with clear evidence of hepatic inactivity, which the mother describes as bouts or turns, are the physical and nervous manifestations of the underlying disturbance of metabolism, produced by over-exertion, psychical shocks, or infective disturbances.

The reaction of young children to hypoglycaemia and ketonaemia, induced experimentally by starvation and by a diet with little sugar and a high content of fat, has recently been investigated and recorded in an interesting communication by Salomonsen. The author reviews at the same time the extensive literature on the subject of ketonaemia and hypoglycaemia. The application clinically of the work of Hilliger, Hecker, Frölich, Ross and Josephs, Cammidge, Osman and Close, and many others, presenting as it does much that is contradictory, has not yet been sufficiently defined or even sufficiently discussed.

Fifteen young children between the ages of 1 and 4 were subjected by Salomonsen to periods of starvation of from thirty-six to seventy-two hours. Within the first twenty-four hours there was invariably a rapid and extreme fall of the blood sugar; in several cases it fell below 0.04. Simultaneously the blood acetone rose from minimal amounts to figures which gave on an average nearly 0.2 part per 1,000.

Twelve children between the ages of 5 and 14 were suddenly put on a diet poor in carbohydrate and rich in fat. In both series symptoms were produced, the intensity of which varied very much in different individuals, but which comprised pallor, anorexia, somnolence, vomiting, loss of weight, increased excretion of nitrogen, hypoglycaemia, ketonuria, and sometimes a palpably enlarged liver. The author notes—and this is of especial interest in the present connexion—that he was invariably able to predict which individual children would show a strongly marked reaction. Plump, well-coloured, placid children were, as a rule, little incommoded. But in the case of certain fragile, "neurolabile" children the different symptoms reached quite the same intensity as in a spontaneous attack of cyclical vomiting.

In these experiments we are furnished with evidence which supports the clinical observation that it is especially the nervous child who reacts most to stress, whether starvation, pyrexial infection, or emotional excitement.

Hypoglycaemia and Disorders of Sleep.

It is clear that that particular stress which in practice is most commonly the cause of an "attack" or "bout"—I mean excessive emotional excitement—is not capable of precise investigation in the laboratory, but the reaction of the children to hypoglycaemia, induced by starvation and by a diet with insufficient carbohydrate, is highly suggestive. Nor can the laboratory furnish us with proof of what seems to me equally true, that when the metabolism of the nervous child is under strain in this particular way, when we find hypoglycaemia and ketonaemia, we encounter always an exacerbation in all nervous symptoms. It is when the child is in this state of prostration, of muscular laxity, and of pallor that he is most irritable, least controlled, and most apprehensive, and that the difficulties and struggles of the day are most likely to lead to sleeplessness, night terrors, or enuresis. As if even the physiological starvation of the night were ill tolerated at such times, we encounter a number of disturbances in nervous children which are confined to the night or undergo exacerbation in the night. In very many children with asthma, enuresis, sleep-walking, and night terrors, we may recognize the tell-tale smell of acetone in the breath. In all these conditions I believe that we may regard a low level of the blood sugar as, in some way, a cause or an indispensable part of the cause of the disturbance. The metabolism of the night differs from that of the day, because the blood sugar is at a low fasting level, and a higher proportion of the energy is derived from fat as shown by the respiratory quotient. Salomonsen found that the early morning urine always contained the highest proportion of acetone. This is in accordance with the common complaint of mothers of such children that they get up "at their worst," pale, yawning, and intensely irritable. Only after breakfast has provided the necessary carbohydrate is there improvement.

The sleep of certain children, whenever there is some degree of hypoglycaemia and ketonaemia, tends always, I think, to be abnormal. Confusion, unhappy delirium, muttering speech, restless movements, and terrifying dreams are then the after-effects of the emotions and excitements of the day.

Enuresis, in many cases I think, may be regarded as a specific night terror. It is not the child who does not care who wets the bed, but the child who cares too much, who goes to sleep fearing that the accident may happen, oppressed by the conviction that it will happen, dreaming that it does happen. As a rule he is intensely unhappy because of his failing. Sometimes, it is true, he hides his feelings and ostentatiously affects an air of unconcern. At times, too, in the interests of his daily life he does gain genuine relief. There may be intervals when he forgets it. Yet at times of exhaustion or depression the obsession is apt to return in all its old power, and these relapses are especially prone to recur in that state of pallor, prostration, irritability, and increased apprehensiveness which accompanies, and in itself indicates, a blood sugar at the lower levels of its range, ketonaemia, and an inactive liver.

I do not mean to deny in the least the importance of the psychological aspect of the problem, but, at the moment, that which I particularly wish to emphasize is the close association in childhood between mental states and states of metabolism. In the state which I have tried to describe I think that we find a powerful predisposing cause of disorders of sleep. In adults, alcohol may bring sleep because it brings courage—Dutch courage we call it—which turns the mind from worry, from the investment which has gone wrong to the investments which have succeeded; from the disappointments of the day to the hopes of to-morrow. When the blood sugar is low, the mind is apt to be agitated, restless, apprehensive. In such a case either sleep will not come to the child or sleep is light, and the unrest of mind is shown by moaning or muttering speech, by unhappy dreams, by night terrors, or by enuresis.

Rest, wise and understanding management, and a diet with a higher percentage of sugar and a somewhat lower percentage of fat, are the chief needs of the nervous child. It is interesting to speculate how far the introduction on a large scale into the dietary of man of the most easily assimilated food stuff—sugar—has been necessary to enable him to stand the strain and to combat the nervous exhaustion of the increased speed at which he lives. To Shakespeare sugar was a rare delicacy. It is of honeyed words and honeyed smiles that he speaks. Jamaica and Demerara provided for the quiet movement of the eighteenth century. The manufacture of beet sugar on a large scale was perhaps necessary before life could accelerate. How invariably in some children travel, change, rush, excitement, and so forth may produce a characteristic bout of vomiting, of asthma, of enuresis, of insomnia, or of night terrors—disturbances in all of which some degree of hypoglycaemia may act on a predisposing cause. All of us, under a sufficient emotional strain, grow pale and lax, yawn, feel nauseated, become irritable and sleepless, and lose control, concentration, and the ability to face the difficulties of life. The British Army found the value of rum. The German troops had their pockets full of sugar. It is the same with the warfare of the nursery. The negativistic, difficult child, exhausted by his struggles with his parents, or by some emotional shock, has a high need for sugar. In practice night terrors are very often well controlled by glucose.

Hysteria and Enuresis.

I wish I could speak as confidently of the control of enuresis. But here, and especially with older children, the psychological factors concerned are more complex. In some few inveterate cases I think a true hysterical paresis of the sphincter has developed and perpetuates the incontinence. In a certain proportion of cases of enuresis, usually in boys, there is added incontinence of faeces. This form of faecal incontinence is not to be confused with the accidental discharge of a watery stool which the nervous, excited child is unable to hold. In the incontinence of faeces of which I speak, and which accompanies certain inveterate cases of enuresis, the escaped mass is hard and scybalous. The symptomatology is indeed identical with that which is found in organic paralysis of the rectum from a transverse lesion of the cord. Very slowly the hard scybalous mass protrudes and escapes through a sphincter which is toneless and paretic. The child is quite unconscious of this passage. The mucous membrane, normally so sensitive, is completely anaesthetic. The child may not even feel a finger passed through the patulous sphincter in making a rectal examination. In practice it is not easy to demonstrate a similar paresis and anaesthesia in the sphincter of the bladder; but I think that this occasional extension to the rectum, where matters are more easily investigated, does very strongly suggest the hysterical nature of some inveterate cases of enuresis.

The child is physiologically hysterical and normally open to the force of all suggestions habitually made by the grown-up people around him. The hysteria of warfare differs from the hysteria of the nursery only because the nature of the suggestions offered. Hysterical blindness, deafness, mutism, and paralysis are rare in childhood, because these are not the disasters feared by a too anxious or apprehensive mother. The mother of the child with enuresis is often most miserable and most pessimistic. Everything has been tried. Nothing succeeds. I have known mothers who could hardly speak of the difficulty without tears. I have a letter from the child of one such mother:

> "Dear Doctor," she writes, "I am now quite a dry girl. What cured me was sleeping with Daddy."

Up against this large unconcerned male she had regained peace of mind and self-confidence.

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THE GLIOMA GROUP STUDIED BY ORDINARY HISTOLOGICAL METHODS.*

BY

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FROM time to time attempts have been made to subdivide the glioma group. In 1912 Tooth[1] of the National Hospital, Queen Square, showed that clinical malignancy was associated with the presence of enlargement of the glia cells, numerous mitoses, and hyperplasia of the vascular endothelium. The most important contribution, however, is that of Percival Bailey and Harvey Cushing,[2] who in 1926 introduced an entirely new classification of the gliomas. This was based partly on an examination of Dr. Cushing's unrivalled collection of brain tumours by means of the methods devised by Ramón y Cajal, del Rio Hortega, and the other members of the brilliant Spanish school of neuro-histologists, and partly on the correlation of the pathological picture with the clinical course. The study revealed that some of the subgroups were to all intents and purposes innocent, while others were highly malignant.

There were fourteen of these subgroups, each composed, for the most part, of one type of cell met with during the development of the brain. The classification is therefore an embryological or histogenetic one, and the cells are recognized by their reaction to the special gold and silver stains (gold sublimate and silver carbonate) introduced by the Spanish neuro-histologists. It is the object of this paper to show that the important types of tumour can be recognized by ordinary histological methods, and without the aid of the difficult and specialized gold and silver methods. In addition to haematoxylin and eosin, however, Mallory's phosphotungstic acid haematoxylin should always be used, for it stains both the neuroglia fibrils and many of the protoplasmic prolongations of the cells, so that the picture becomes much more clear-cut and characteristic.

To master the fourteen groups of Bailey and Cushing is nearly as hard as to master the fourteen points of President Wilson. But in several of these only one or two examples have been described, and others may be fused into larger groups. For the purpose of this paper only a few of the main divisions will be considered.

As the basis for classification is an embryological one, a word or two must be devoted to developmental matters. The interstitial tissues of the central nervous system consist of three main elements—namely, the astroglia, the oligodendroglia, and the microglia. The microglia is mesodermal in origin, and is therefore not truly a part of the neuroglia. So far, no tumours have been recognized as arising from this tissue. Tumours may arise from the oligodendroglia, but very few have been recognized, and as I have no experience of them they will not be discussed here. We are left, therefore, with the astroglia and the cells from which it originates.

The epithelium of the medullary groove is the starting-point of the entire central nervous system. From this there arise two very different sets of cells: (1) spongioblasts, elongated cells which form the spongework or interstitial tissue of the nervous system; and (2) neuroblasts, rounded cells which develop into neurones. In addition, there is a third group of "undifferentiated cells" regarding which little definite is known. They may remain undifferentiated, being known as medulloblasts, or they may become differentiated into neuroblasts or spongioblasts. It may be that the oligodendroglia arises from some of these cells. We are concerned here only with the undifferentiated form, the medulloblast. To return to the other two main branches of the parent stem, the primitive spongioblast develops first into a bipolar spongioblast and then into a unipolar spongioblast. This in turn gives rise to an astroblast. The astroblast is distinguished from the spongioblast by the development of numerous processes, one of which becomes attached to a vessel wall and is known as the "sucker-foot." Fibrils appear in the protoplasmic processes, and the cell now becomes an astrocyte, which is the adult classical neuroglial cell. Some astrocytes do not develop fibrils. These are called protoplasmic astrocytes, in distinction to the ordinary or fibrillary astrocytes. The change from the astroblast to the astrocyte takes place about the fourth month of foetal life. Some of the primitive spongioblasts remain attached to the ventricular wall, and are then called ependymal spongioblasts. When these lose their peripheral processes they become changed into the cuboidal cells of the ependyma. Both ependymal cells and ependymal spongioblasts contain tiny rods, known as blepharoplasten, by which they can be recognized.

Any one of the cells just enumerated may form the principal constituent of a glioma, so that there have been described spongioblastoma multiforme, spongioblastoma unipolare, astroblastoma, astrocytoma protoplasmaticum, astrocytoma fibrillare, ependymoblastoma, ependymoma, etc. It must be kept in mind that many of these are but slight variations of the same theme, and, as Ewing remarks, it appears premature to urge the full adoption of this very complex classification. It seems better to wait until general usage has made its selection of terms and classes. Further, these types are not always pure. In my own experience I have found a spongioblastoma combined with an astrocytoma, an ependymoma with an astroblastoma, and an astroblastoma with a spongioblastoma. These transitions can be more readily examined in autopsy material, where the whole tumour is available, than in fragments removed at operation. Moreover, a slowly growing astrocytoma may become changed by irritation into a rapidly growing spongioblastoma.

The fundamental contribution of Bailey and Cushing is not a mass of names, but the demonstration that variations in histological structure correspond to variations in malignancy. At one end of their list of 492 gliomas there are the medullo-epitheliomas, in which the average survival period was eight months, while at the other end are the fibrillary astrocytomas, in which the average survival period was eighty-six months, some of the patients living for many years. Removal of such a tumour may be followed by a complete and lasting cure. Speaking generally, the more primitive the cell type, the more malignant is the tumour. Thus the medulloblastoma and the spongioblastoma are highly malignant, while the astrocytoma and the ependymoma are relatively benign.

This paper is based on a study of 31 gliomas obtained in the post-mortem room. All the principal types are represented, and these alone will be considered. The grouping is as follows:

Astrocytoma	16	Ependymoma	1
Spongioblastoma... ...	9	Astroblastoma	1
Medulloblastoma ...	3	Unclassified	1

Most gliomas can be placed in one of the three main groups of astrocytoma, spongioblastoma, and medulloblastoma. The ependymoma is rarer, and the astroblastoma still more rare. In Bailey and Cushing's series the astrocytomas and spongioblastomas were present in equal number, while in my own material there were twice as many of the former as the latter.

Astrocytoma.

This tumour, in its fully developed form, may be regarded as innocent in type. Many of Cushing's patients were alive years after removal of the tumour: the average survival period was over six years. Growth is slow, so that even without operation the course may be a prolonged one. Its benign character is explained by the adult type of cell of which it is composed. It is not suggested by the gross appearance, for the tumour is even less well demarcated than the spongioblastoma from the surrounding tissue, and merges insensibly with the normal brain. Moreover, it may attain a great size. In one of my cases the entire frontal lobe was occupied by the tumour. It occurs in the hemispheres both of the cerebrum and cerebellum—the former usually in adults, the latter in children. Cyst formation is common, although the reason is obscure. The cyst fluid is often under distinct pressure, which

* Read in the Section of Bacteriology, Pathology, Physiology, and Biochemistry at the Annual Meeting of the British Medical Association, Winnipeg, 1930.

would not be expected if the process was merely a degeneration. The only alternative seems to be that the fluid is produced by the tumour tissue. Many cerebellar cysts are of this nature. The tumour may disappear, except for a small nubbin attached to the wall of the cyst. In one of my cases even this could hardly be detected.

The microscopic picture in a typical case is very characteristic, and can be recognized at a glance. Excellent examples may be seen in Tooth's paper. The cells as a rule are few in number, and are separated by a dense network of glia fibrils, which are well stained by phosphotungstic acid haematoxylin, and which supply the chief diagnostic feature. In other cases the tumour may be much more cellular, and occasionally I have found it difficult to draw with certainty the line of distinction between astrocytoma and spongioblastoma. The cells (astrocytes) and their nuclei are usually spherical, but may be elongated. There is a complete absence of mitotic figures. Nerve cells may remain intact, surrounded by tumour tissue. Although this is occasionally seen in other gliomas, I have found it very suggestive of astrocytoma. The surrounding tissue does not show any gliosis, thus differing from the more malignant forms of glioma. It is therefore difficult to determine with certainty the limits of the tumour. Calcification is fairly common, and may be detected clinically by means of *x* rays. It is best marked in the walls of the vessels, but it is not confined to this position. In one case lime salts were present in the brain tissue surrounding the tumour.

By means of gold impregnation it is possible to show that some tumours are composed mainly of fibrillary astrocytes, while others consist of protoplasmic astrocytes. Bailey therefore speaks of astrocytoma fibrillare and astrocytoma protoplasmaticum. It is difficult to make this distinction in phosphotungstic acid haematoxylin preparations, and, as nothing seems to be gained by doing so, I have not attempted to separate these subgroups.

Spongioblastoma Multiforme.

The spongioblastoma is the most common tumour in Bailey and Cushing's series, although not in my own. It is perhaps the most malignant of all the gliomas, and corresponds to the gliosarcoma of the older literature. The onset is rapid and the course brief. In addition to the ordinary form, named spongioblastoma multiforme by Globus and Strauss[3] in 1925, because of the variety of the cells which compose it, a more rare type, known as spongioblastoma unipolare, has been described. This is composed mainly of unipolar spongioblasts. The tumour is widely invasive, and recurs after removal. It may give a false impression of encapsulation, because degeneration and softening may cause the central part to become separated from the firmer peripheral part of the tumour. As a rule it is softer than the astrocytoma, being cellular rather than fibrillar in structure. It also differs from that tumour in being usually confined to the cerebral hemispheres. In one case it grew from the septum lucidum and separated the lateral ventricles. Not infrequently it is multiple. The several tumours should be regarded as an expression of multiple centres of origin rather than as metastases.

The microscopic appearance is very different from that of the astrocytoma, although borderline cases occur in which a distinction is very difficult. The chief characteristics of the tumour are its cellularity and the multiform character of the cells. Three main types of cells may be distinguished: (1) oval, pear-shaped, or elongated cells; (2) undifferentiated round cells; and (3) giant cells with numerous nuclei, often bizarre in arrangement. Mitotic figures are numerous and often atypical. Indeed, there is no tumour in which cell division can be more readily studied. There are no glia fibrils—in sharp distinction to what is seen in an astrocytoma. The tumour is very vascular, and haemorrhages are frequent. Proliferation of the vascular endothelium is a very characteristic feature, and large masses of these cells may be formed. In one case seven or eight mitotic figures could be seen in the endothelial cells in one field. As a result, the lumen of the vessel may be closed, and this may partly account for the frequency of degenerative changes. In some of the cases this change was observed in the surrounding brain tissue, as if the endothelial hyperplasia were preceding the spongioblastic proliferation. There may also be proliferation of the adventitial cells. Outside the tumour there is often a proliferation of astrocytes. These may assume the form of giant glial cells, but these irritation forms are never multi-nucleated, and are totally different from the giant cells of the tumour.

It is not so easy to be certain of the origin of the spongioblastoma as in the case of the other forms of glioma. The elongated and pyriform cells appear to be spongioblasts, but the giant cells present a problem which has not yet been solved. Globus and Strauss consider that the giant cells are unripe and highly atypical spongioblasts, but this appears very doubtful. According to Bailey, the multiplicity of structure is largely due to degenerative and reparative processes. More study is needed of this group, and it may be that the proliferation of the vascular endothelium may prove to play a more fundamental part than has hitherto been suspected.

Medulloblastoma.

As this tumour arises from one of the most undifferentiated of cells, the medulloblast, it is one of the most highly malignant of the gliomas. It usually occurs in children, but one of my two patients was an adult. In a child it is likely to be in the roof of the fourth ventricle, usually in the vermis of the cerebellum, while in the adult it is more likely to grow from the cerebrum. The tumour is soft and reddish-grey in colour. It may invade the subarachnoid space, giving rise to one form of the condition known in the literature as diffuse sarcomatosis of the meninges.

The microscopic picture shows an almost complete lack of differentiation, and suggests a round-cell sarcoma. The fibrils of the astrocytoma and the cellular variety of the spongioblastoma are both lacking. The cells are for the most part round, but some may have a tail like a carrot. In places there may be a pseudo-rosette arrangement, the cells being collected in groups, often around a small vessel. The tails of the cells are directed towards the centre, and as these tails stain poorly it may appear as if the nuclei were arranged round a clear space, but there is no true lumen. In addition to the undifferentiated cells, both spongioblasts and neuroblasts may be seen in silver carbonate preparations. It is this indication that the cells are bipotential which justifies the assumption that the tumour arises from the medulloblast, a cell which cannot of itself be recognized morphologically.

Ependymoma.

Bailey describes two types of tumour: the ependymoma, consisting of adult ependymal cells, and the ependymoblastoma, composed of ependymal spongioblasts. These will be considered together. Like the medulloblastoma, this tumour also usually arises in relation to the roof or the floor of the fourth ventricle, but it may grow from the wall of the lateral ventricles, the aqueduct of Sylvius, or the central canal of the cord. It is considerably firmer than the medulloblastoma. The cells of which it is composed are usually well differentiated, and the tumour is of slow growth and low malignancy. Calcification is common.

Microscopically the tumour is composed of cells which are tadpole-shaped, with a single heavy tail. These cells may be grouped around a small lumen, just as normally they are grouped around the ventricular cavity. To this arrangement the rather misleading name of true rosette is applied. The presence of these little canals is very characteristic of an ependymoma, and is not seen in any other form of glioma. The tiny rods (blepharoplasten) are seen between the nucleus and the lumen, and are quite characteristic of ependymal cells.

Astroblastoma.

This is a rare tumour, but it is included here because its appearance is so characteristic. It occurs in the same situations as the astrocytoma, but is composed of a more primitive cell, the astroblast. This cell is characterized by the possession of one large sucker-foot, which is attached

to a blood vessel; it is not sufficiently developed to form fibrils. The tumour cells are for the most part grouped around vessels to which they are attached by the sucker-foot, so that the condition can be recognized at a glance. Although normal astrocytes are attached to the vessel wall, in the astrocytoma this arrangement is not at all evident, whereas in the astroblastoma it is the chief feature of the tumour.

Conclusion.

It has been shown that the gliomas can be divided into a number of distinct groups by the aid of ordinary histological methods. This subdivision is of real importance, because the tumours differ not only in their microscopic structure but also in their clinical behaviour. At the same time it is well to realize that this classification is in no way final. It is based upon the resemblance which the tumour cells bear to certain of the more embryonic glial cells. When the histological picture is typical, the recognition of the group to which the tumour belongs is very easy. In other cases it is difficult or even impossible to decide how to classify the tumour. It is in such cases that the special gold and silver methods of staining place so powerful a weapon in the hands of the pathologist, for by means of them the minute morphology, and in particular the processes and fibrils of the cells, are brought into prominence. In the majority of the gliomas, however, the ordinary methods of histology are sufficient for diagnosis and classification.

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THE VALUE OF X-RAY DIAGNOSIS IN MEDICO-LEGAL CASES.*

BY

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THE use of x rays in medico-legal cases began shortly after their discovery. Unfortunately the first legal cases that occurred were due to burns caused by the rays. Later on, x-ray evidence was called in to help in legal cases where the patient had suffered a fracture, and the x-ray plate was allowed as evidence of the fracture. A time came when the operator who made the actual roentgenogram was haled to court to swear that the radiograph shown as evidence was really the one he had taken. During this phase of the law I spent a whole day in court to give evidence, and though I would swear that the roentgenogram was that of the patient and that it had been made in my department, I had not actually pressed the button when the x rays were used, and therefore the judge would not allow me to give evidence.

It is seldom now that the radiologist is called upon to testify that he made the picture. In a large department with several technicians making several dozen films a day it would not be possible to be certain that a technician would remember the actual making of the radiograph in question, and frequently after he has made the exposure he does not even see the finished film, and cannot therefore swear that it was made by him. Such technicalities are now waived, and the word of a responsible doctor is accepted that the film under consideration is the film of the patient required.

As already mentioned, the first medico-legal aspect of x rays was due to the burns caused by x rays. The earliest reference I have been able to find is a report in the *British Medical Journal* of April 8th, 1899, of a case in Paris, when Madame Moekert had her hip examined by x rays. The first "sitting" lasted forty minutes, the second forty-five minutes, and the third an hour and a quarter. The court decreed that a medical commission be appointed to decide the duration of the examination considered safe. Two years later the *Lancet* reported the continuation of this case. When it came up for trial, the defence was that the method of application of radiography was not yet formulated, that no one knew the conditions which gave rise to burns in some people and not in others, and that consequently the radiographer was not responsible. The court gave the full amount of damages asked for (5,000 francs) and found that the radiographer had acted imprudently, more like a workman than a medical man, and that his apparatus was defective. The judgement was subject to appeal.

It is interesting nowadays to think of exposures of forty to fifty and seventy-five minutes in order to make a roentgenogram. The dose of x rays which will cause a burn is pretty exactly known now, and, though there may be a slight difference in the reaction of one person compared to another, it is not sufficient to justify a statement that a dose which will have no effect on one person will cause a serious burn on another.

Again, the London *Daily News* of May 1st, 1899, records that in Chicago a patient was awarded 10,000 dollars for injury caused by the x rays. These are the earliest medico-legal cases I have found.

In June, 1901, Mr. Golding Bird wrote in the *British Medical Journal* on the medico-legal aspect of x rays in regard to fractures, and pointed out the necessity of employing an expert to make the roentgenogram and an expert to interpret it. There is no need to dilate on the fact that this advice, given thirty years ago, is as sound to-day. Mr. Golding Bird cites instances in which a skiagram has shown what appeared to be a fracture where none exists, others in which a fracture has been missed altogether, and others again in which, owing to the well-known translucency of young callus to the x rays, it is possible to show a fracture as still existing which has united sufficiently to bear weight, and he arrives at the conclusion that skiagraphy should be employed only as a subsidiary agent in diagnosis, and that even in this secondary capacity its evidence in cases of difficulty and doubt should be received with caution and only after due interpretation by someone whose experience warrants him to speak with authority.

X-ray films can be used to great advantage in medico-legal cases without ever reaching a court. I remember one such case in which a woman fell from a moving street car and claimed compensation for a fractured femur above the knee. She was carried to her home, where she lay for six weeks under the care of a doctor, and was then transferred to the Royal Victoria Hospital, where an x-ray of her knee was made. It showed a fracture above the knee in poor position, and callus was present. I formed the opinion that the fracture was much older than six weeks. Shortly after this, a representative of the street railway company, the claims adjuster, came to see me and said: "We admit the accident and the fracture, and wish to settle for it without going into court." In the interests of justice I felt bound to express my opinion that the street railway company was not responsible, and that the fracture might have happened ten years earlier. The agent was dumbfounded, and asked me what he was to do. I told him to investigate the accidents brought to hospitals in the city for the last twenty years, and look out for the name of the patient. He did so, and at the third hospital he found the name of the woman and the fracture described six and a half years previously. With full information on the case he charged the woman with intent to defraud, and she admitted it and withdrew her claim. The company had been willing to settle for 2,000 dollars.

The occurrence of a pathological fracture, due to negligence of the same street railway company, again brought the same claims adjuster to me, and once more he told me his company admitted responsibility and wished to settle out of court. X rays showed a recent fracture of the femur. The surgeon in charge of the case was surprised when I pointed out that the fracture was a pathological one. The case went to court as an ununited fracture, and it was admitted in court that it was a pathological fracture,

* Read in the Section of Radiology at the Annual Meeting of the British Medical Association at Winnipeg, 1930.

but nevertheless the patient was awarded 2,000 dollars compensation. The judge took the view that the company should have left the road clear, so that a person suffering from metastatic carcinoma would not trip and so suffer a pathological fracture. The patient died from metastatic carcinoma about six months after the accident.

Medical men who have no right to express an opinion on a radiograph may be heard in court making beginners' mistakes, calling epiphyseal lines fractures, and normal extra bones broken pieces of bone. A thorough knowledge of epiphyses and their times of union is not all that is required of an expert. He must also know the unusual epiphyses and the epiphyses that do not unite even in middle life.

I shall give two instances of epiphyses of medico-legal importance. At the proximal end of the second metacarpal bone there is a rare epiphysis. It is found constantly in certain lower animals; I have seen it in the seal. In one case of this sort I heard it described as a fracture, and legal action was proposed till I persuaded the patient to allow me to radiograph the bone on the other side, where exactly the same condition was seen—namely, an extra epiphysis (which I call the "seal" epiphysis) that had not united. The legal aspect was not considered further and no court case followed.

Another epiphysis I have seen mistaken for a fracture is the one which occurs at the outer end of the acromion. Such a case was sent to me for examination for compensation as a fractured scapula. It is the only case I have seen in which the epiphysis at the outer end of the acromion remained as a separate bone. The man was 38 years of age, and a pension depended upon whether or not he had sustained a fractured scapula. Knowing that it was on record that this epiphysis sometimes may not unite, I *x*-rayed the other scapula and found exactly the same condition present in it. The question of pension for fractured scapula was then dropped, and the condition was considered a normal one.

The divided scaphoid bone is frequently found. I believe this always follows a fracture. I have never seen a case which I considered was a scaphoid bone developed in two parts. When the scaphoid fractures, one half may degenerate while the other half remains normal; sometimes it is the distal half which degenerates, and sometimes it is the proximal. This phenomenon is due to the blood supply which enters by the interosseous ligament between the navicular and the capitate. If the fracture is proximal to this ligament, the proximal half of the bone stands still and remains as a sequestrum, while if the fracture is distal to the ligament, the distal half stands still while the proximal half with the good blood supply loses its calcium from disuse.

Fracture of the semilunar bone is a rare injury. When, therefore, a patient claims that a recent injury, say seven days ago, has crushed his semilunar, and the *x* rays show a crushed semilunar, one has to be able to distinguish between a recent and an old fracture. A thorough knowledge of the formation of callus is necessary. Callus may be present that can be felt clinically, but it may not appear in a film because calcium has not been deposited in sufficient quantity to make itself evident. Certain bones form much callus, like the tibia, femur, radius, and ulna, while the bones of the scalp show usually no callus after fracture.

It is important to know the rare bones of the foot and wrist, as these may be called fractured pieces by those who know anatomy as taught to the medical student. I shall mention a few of these as possible pitfalls in medico-legal cases.

1. The os trigonum is a separate part of the astragalus in about 10 per cent. of normal feet.

2. The os peroneum is a sesamoid bone in the tendon of the peroneus longus. It is found in 10 per cent. of feet examined, and may be single, double, triple, or multiple in appearance.

3. The extranavicular lies between the astragalus and the navicular. I have seen this bone in over thirty cases during the last thirteen years.

4. The internal sesamoid bone of the great toe may be in two or three parts and yet be normal. I have never found the external sesamoid of the great toe other than single.

5. The tibiale externum is fairly common. It occurs in about 10 per cent. of cases examined.

6. Other bones of the foot seen more rarely by *x* rays are the secondary os calcis, the intermetatarseum, and the os vesalianum. The latter I have seen as an epiphysis, and only once in an adult. The fact that fracture occurs so frequently at the base of the fifth metatarsal bone makes it important to distinguish an os vesalianum from this fracture.

7. Fracture of the os calcis should be examined in three directions; only one of the three may show the fracture. The lateral view may show fracture only by the want of proper arrangement of the trabeculae.

In regard to diagnosis of certain fractures it is well to bear in mind these points:

1. A Potts fracture and other fractures may be easily seen in one view and not in another; therefore at least two views at right angles should be made of every fracture.

2. Fractured ribs may be invisible in one view and visible in another. The perfect examination for fractured ribs is three stereoscopic views of the chest on 14 × 17 inch films, one view antero-posterior, one at the half left position, and one at the half right position.

3. The patella may develop in several parts, and this condition simulates a fracture. I have seen three cases of this, and in each case the condition was present in both patellae.

4. Fractured skull may similarly be only visible at certain angles. My routine examination for fractured skull is stereo right and stereo left views, an antero-posterior and a postero-anterior view—six in all. Other views are made at times, such as a stereo of the foramen magnum and the surrounding bones. I have seen a fracture of the right parietal bone visible in the right stereo film, and invisible in the left stereo film. Meningeal artery grooves and diploic sinuses are so irregular in position and appearance that much experience is required to diagnose these from a fracture.

A few practical points of differentiation are as follows:

(*a*) Meningeal grooves have white edges, and fractures have not. This is of value only when the white edge is seen.

(*b*) Fractures may branch like meningeal grooves.

(*c*) A "meningeal groove" which does not begin at the base should be suspected as a fracture.

(*d*) A diploic sinus may run in any direction, as may a fracture.

(*e*) Fracture of the base of the skull is seldom seen by *x*-ray examination. It may be seen in a postero-anterior view in the base of the orbit, or in a stereo view of the foramen magnum.

(*f*) A fracture line may be narrower than a meningeal groove, and it may be wider than a diploic sinus.

(*g*) A depressed fracture causes a white line, or a black-and-white line, while a simple fracture causes only a black line.

Anomalies of the spine are very common. As pointed out by Cushway and Maier[1] in an analysis of 916 symptomless spines, anomalies were found in 45 per cent. No symptoms were present in cases of scoliosis, old-fractured ribs, old-fractured pelvis, old-fractured vertebrae, spondylolisthesis, and sacralization.

Some other points of medico-legal interest may be referred to here. Other conditions may be found along with a fracture, such as osteo-arthritis, Paget's disease, calcareous vessels, periosteal thickening of lues, and these delay the return of function. A negative *x* ray may be as important as that of a positive fracture. Severe and permanent injury may occur in which *x* rays show nothing.

Both shoulders, knees, hands, feet, and hip-joints should be taken as a routine; it involves little extra work and expense, and proves of great value in some cases.

Before giving an opinion in a medico-legal case the following points should be considered.

1. X-ray evidence is only part evidence. The complete physical and symptomatic evidence and history make up the whole evidence.

2. The roentgenologist has as much right to know the history of the case as the physician has. Even a pathologist demands information before giving an opinion.

3. The roentgenologist should be familiar with the clinical aspect of the case, and read or know the literature on the subject before giving evidence.

4. An *x* ray serves to prevent a malpraxis suit, and the want of an *x* ray in a fracture case is considered malpraxis.

5. It is not the duty of a roentgenologist to express an opinion on the amount of disability likely to follow a fracture by simply examining the roentgenogram.

An instructive table showing the average number of days of disability following 3,254 fractures is given by Davis.[2] This is a useful table; as an example from it, let me ask you: How long do you consider is the average disability following a fractured os calcis? Davis gives it as 118 days. He gives a fractured femur 208 days, a Colles fracture 48 days, and so on throughout the series of common fractures.

Dr. M. H. Todd[3] has analysed 551 fractures at the Lynch Kentucky mines, where the fractures have been followed to the final result. He concludes that return to light work is the best form of treatment, and is better than massage and diathermy. He found a remarkable difference in the speed of recovery, depending upon whether or not the injured patient was a compensation case. In his experience really serious disability following a fracture is very rare. The only exception is compression fracture of the spine, where a little disability persists. He reports 47 fractures of the spine, of which 19 were compression fractures of the twelfth, or first or second lumbar vertebra, from the patient being bent violently double.

Pitfalls will be laid for you, but with good training and experience, a thorough study of the case, and an honest opinion, no pitfall should catch you so long as you testify honestly in accordance with the facts. You should know not only the normal anatomy but also the normal variations.

I remember a pitfall being prepared for me. It concerned a fracture of the cervical vertebra in a railway accident. The *x* ray showed a small piece of bone detached from the fifth cervical vertebra. It measured 1/16 inch in the roentgenogram. The opposing counsel asked me if this was a small fracture, and I answered that it appeared to be so. He then cast doubt on my reply, and asked me how small it was. I then saw his line of defence and that his object was to make me belittle the fracture. But I was on familiar ground and he was not, and I determined to lead him on instead of him leading me, so I answered: "It seems to be about 1/8 inch long." He asked, "Could it be any longer?" and I said, "Yes, 1/4 inch." He led me on. "Any longer?" I said, "Yes, it might be 1/2 inch long." During this time he had been looking down towards his feet, as though he did not care about the case, but at this point he pulled his gown around his shoulders and turning on me he asked, "How long *could* it be, doctor?" I said, "about 3/4 inch, but no longer." Triumphantly he asked me to tell the court how a broken piece of bone 1/16 inch long could be 3/4 inch long. I had seen what was coming and had a match ready in my hand. I broke off 3/4 inch and held it up to the light showing how its shadow was 3/4 inch in one direction and 1/16 inch when seen end-wise. I was asked to step down out of the box at once. I mention this merely to show how familiarity with your subject can give you confidence.

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TUBERCULOSIS AND PUBLIC HEALTH.*

BY

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In a general discussion on tuberculosis and public health two subjects will naturally receive prominence—the progress and efficiency of current preventive measures and the behaviour of the death rate, which, in many countries, is falling with greater or less rapidity. Antituberculosis campaigns, however, apart from such direct results as may be attributed to them, must be credited with having accomplished much more than their immediate purpose—the creation of machinery for the control of a particular affection. They have assisted and stimulated general public health measures for the common welfare, and have helped to direct the broad policy of preventive medicine along its present channels. For instance, studies of the incidence of tuberculosis, particularly of the conditions which facilitate the spread of gross infection in the home and in the workplace, have lent powerful support to higher standards of housing and of environmental hygiene, and even to the promotion of social legislation. They have also been fruitful in driving home lessons of great educative value in personal and domestic hygiene, such as the benefits of fresh air and ventilation. Again, the rationale of tuberculosis schemes in endeavouring to secure for individual patients early diagnosis, prompt treatment, and suitable after-care is applicable with equal force to many other affections. Thus the problems raised by tuberculosis are also fundamental problems of public health. There is no doubt that the prevention of disease and ill-health generally has been greatly furthered by the tuberculosis campaign, which, by holding out the prospect of controlling tuberculosis, took a firm hold on the imagination of the public a generation ago.

The tactics adopted in attacking tuberculosis follow the model scheme laid down by Sir Robert Philip, which is now applied more or less fully in most countries. Tuberculosis schemes have retained their well-known classical features with little alteration since they were evolved and expounded by their author. That they have stood the test of time and experience is a tribute to his acumen and foresight, and it may be remarked that he clearly perceived the intimate connexion between tuberculosis and public health when he presented his work and ideals to the nation for incorporation in the public health system of the country.

In a brief introductory survey it will be convenient if I limit my remarks to a few observations on some of the administrative measures in operation for reducing sickness and death due to tuberculosis. I have hesitated to use the common expression "eradication of tuberculosis," a term which is frowned upon by students of immunity as connoting an impossible or even dangerous ide

The Tuberculosis Dispensary.

The broad functions of the dispensary or clinic are well known and clearly defined as an educative centre and "clearing-house," related on the one hand to the homes of the people and on the other to the institution for treatment. It performs with minute care every possible social, medical, and preventive service on behalf of its patients, and is most efficient when closely related to, or forms an outpost of, a public health organization. As a centre for diagnosis it must have free access to an up-to-date *x*-ray department, and, if need be, to observation beds. In cities such as Glasgow, where much chronic respiratory disease exists, the differential diagnosis of chest affections becomes an important and often difficult duty, and tuberculosis dispensaries tend to become centres for the diagnosis and treatment of a variety of chronic diseases of the lungs. They are often criticized for this tendency, but I am not sure that this is a bad thing, provided the physician maintains a due sense of perspective and does not, as sometimes happens, indulge in a riot of over-diagnosis, especially in dealing with children. This raises

*A paper read in opening a discussion at a joint meeting of the Sections of Tuberculosis and Preventive Medicine at the Annual Meeting of the British Medical Association, Winnipeg, 1930.

the question whether these dispensaries have not tended to develop, as regards their medical functions, too much as "*ad hoc*" centres and rather too little along the main current of general medicine. As effective instruments of detection these clinics are confronted with great difficulties in tracking down incipient tuberculosis. Protection of the contact is not so simple a matter as it seemed at one time, while it must be confessed that in the more acute type of phthisis prevailing among young adults the results as regards early diagnosis and treatment have been disappointing. This type of affection still tends to be advanced when detected, and efforts to control it are defeated by its natural history. In fact, phthisis at this age period has remained with undiminished volume and unabated severity, although it has markedly declined as an affection of middle life and of younger ages. The Tuberculosis Society has devoted much consideration to studying and perfecting the machinery of detection. Those who are carrying on field work realize that the problem is one of extraordinary difficulty, created in great part by the epidemiological characters of the disease itself. The persistence of young adult phthisis is a disquieting feature, and constitutes a problem for special investigation.

Institutional Provision.

This takes the form of the sanatorium and hospital, or of both combined. They are administered on the same principles, except that the former makes a braver attempt to effect radical cure. From a preventive standpoint it is very important that the latter type of institution should be ample for the adequate and prompt isolation of the infectious sick. No scheme is complete without this necessary provision, which should take precedence over all other considerations. The relative proportion of purely sanatorium and hospital provision will vary according to the circumstances of the area, especially its housing conditions. In Glasgow, for instance, approximately 12 per cent. of the population live in one-apartment houses and 48 per cent. in two apartments. Phthisis being an infectious disease, domiciliary treatment of advanced cases becomes an impossibility under these conditions, and the preventive problem has to be faced on lines of generous provision for highly infective patients. By this is meant institutions run on "sanatorium-hospital" lines, where moderately advanced and advanced cases can be treated within easy access of their homes, and on a large enough scale to prevent them from being stigmatized as homes for the dying. The nature and extent of institutional provision is also arrived at by studying the stage of the disease at notification and the after-history of the patients. In a series of 2,500 cases in a large industrial area of the city 55 per cent. were advanced cases on notification. Following these to a conclusion, 87 per cent. were dead within two years of notification. Facts like these give the keynote to the type of accommodation required, when considered along with the average housing conditions. The policy pursued has therefore taken the form of providing some 800 beds of this type and 200 for the more definite sanatorium patients for a population of 1,125,000 persons—a proportion of beds to population which, though high, is not yet quite sufficient to meet the demand for hospital beds. This is rather reversing the usual practice, but, besides being a humanitarian measure, it is essential in order to minimize the risk of gross infection at close quarters in small houses.

The death rate from phthisis in Glasgow is now a quarter of what it reached about the year 1870, and its present rate of 0.9 per 1,000 compares favourably with that of many other large cities much better circumstanced as regards their housing conditions. Further, in contrast with many other areas, the descent began from a much higher level of incidence. Scotland's death rate was then almost twice that of England. I mention these facts because Glasgow appears to afford a very suitable environment for an infection which is presumed to spread by close contact. It is a closely packed "tenemented" city, the houses of the poorer classes being small and overcrowded, presenting in a high degree features of propinquity favourable to tuberculosis. The behaviour of phthisis under these conditions illustrates the powerful nature of the protective forces at work. As to what these may be, there is no unanimity. The epidemiological facts fit a number of theories, and the administrator finds himself operating a large and somewhat unwieldy machine with no very clear notion of its precise relationship to the natural history of the disease, although aware that he is being assisted by some unknown agency or agencies. A generally accepted view is that progressive urbanization means progressive tuberculization resulting in a gradual acquisition of resistance, unless this is delayed by unduly low hygienic standards of life. The position of a community on the tuberculosis curve is probably the resultant of a complex series of forces, including a tendency to relatively high rates of incidence among susceptible country stocks from outside, in proportion to their number and rate of influx. The older-established urbanized and well-housed elements develop an increasing degree of resistance, a process which, on the other hand, is definitely retarded among the inhabitants of slum areas. Administration, broadly speaking, proceeds on the principle of (*a*) providing suitable care and treatment for the affected individual, (*b*) preventing as far as possible massive infection of contacts, and (*c*) improving housing and other environment, until medical science has succeeded in evolving some specific method of making individual resistance more secure. Something of the same differential process is at work in Canada, where Dr. D. A. Stewart tells us that the death rate among the Anglo-Saxon population has been halved, while the Indian populations of Manitoba and Saskatchewan are literally soaked in tuberculosis.

Looking at the large decline in Glasgow a little more closely there are two very striking epidemiological features. Practically no impression is being made on the death rate from phthisis affecting young adults of either sex between 15 and 25 years of age. This type appears to have remained unaffected in both incidence and severity. On the other hand, a remarkable fall in phthisis at later ages has taken place in both sexes, most markedly among women. These conclusions are evident from the charts prepared by Dr. J. A. Wilson for the large industrial district of the eastern area of the city, with a population of 200,000 persons, in which the deaths due to pulmonary tuberculosis since 1910 have been plotted according to the age at which symptoms of the disease first developed. They show the relative immobility of phthisis at ages 15 to 25, in contrast to the speedy reduction at younger and later ages, the rate for 35 to 45 years in women having fallen by over 50 per cent. in twenty years. Among the male population the trend in the same direction is very decided, though for older ages the rate was increased during the war years, but is now approximating to the low level for females. It would appear as if tuberculosis were rapidly declining as a chronic affection of the middle-aged, but remaining unaffected as an acute affection of young adults, possibly subject to different epidemiological laws.

Non-pulmonary tuberculosis is on a somewhat different footing, as it is derived from two sources, human and bovine. Its prevention depends, as far as our present knowledge goes, on (*a*) the control and diminution of human sources of infection, (*b*) the elimination of bovine infection, (*c*) adequate and suitable means of treating the individual, so as to reduce the incidence of crippling deformities. In this last respect the pioneer work of Sir Henry Gauvain at Alton has afforded a very clear idea of what is involved in the treatment of tuberculous lesions. Sufficient provision of institutional facilities for special treatment should be an essential part of a tuberculosis scheme to allow of prompt treatment at the earliest stages. The attainment of this ideal should almost entirely eradicate crippling due to tuberculosis. This is the policy pursued in Glasgow, where, with the recent opening of Mearnskirk Hospital for children, it will be possible to increase the existing provision of 350 beds to a total of approximately 750 beds for this purpose.

Till within recent years Scotland has had a relatively high incidence of non-pulmonary tuberculosis. For one thing, it is said that dairy herds in this country have ten times as much tuberculosis as those in America. Whatever be the reason, however, the death rates from these forms of the disease have, since the first decade of

the century, declined at a more accelerated pace compared with the rate of fall for the pulmonary form. There have been, in fact, two concurrent movements. As regards mortality, tuberculous meningitis is one-third, abdominal tuberculosis one-fifth, and other forms two-fifths of the rates then prevailing. Along with this, there has been noticeable a decided diminution in the severity assumed by the various forms of tuberculosis at the younger ages of life, applying particularly to glandular and abdominal disease, but also to bone and joint affections, which are showing less tendency to rapid abscess formation, while amyloid disease is now seldom encountered. It is, of course, impossible to disentangle the factors influencing these epidemiological results, but no doubt the contracting sources of human infection have contributed. It will be observed that the greatest fall has taken place in abdominal tuberculosis—a fact of considerable significance, as this affection is mostly bovine in origin. Although something has been accomplished under the Tuberculosis Order in eliminating grosser disease from among dairy herds, such a wholesale improvement can scarcely be credited to this cause. It appears much more likely that the greatly increased practice of pasteurization of ordinary city milk, to which 80 to 90 per cent. of the supply has been subjected for some years, has interposed a degree of protection against transmission of this form of tuberculous infection. This is a subject which is worthy of the fullest investigation as part of the very vital question of the relation of pasteurization of milk to the public welfare.

PERSONAL EXPERIENCES IN MIDWIFERY.

BY

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THE publication of individual hospital statistics is occasionally somewhat misleading, particularly with regard to midwifery, for selection of cases almost always takes place to some extent.

For instance, one of the best-known maternity hospitals in London has recently published a statement that there have been no maternal deaths in three years out of many thousands of cases. It is doubtful whether mentally unsound persons, or those suffering from advanced tuberculosis of any kind, or those with active septic infections are freely admitted; but these patients must be treated somewhere, and the series reported below is offered for consideration as entirely unselected.

This analysis represents some 1,300 cases, forming a consecutive series in an institution. The majority of the patients were private bookings, the remainder being made up from a county council, a county borough council, and a Poor Law authority. Almost all of them were drawn from labouring classes, though other social classes are also represented. A large proportion of the patients worked, chiefly in mills, till shortly before confinement. Though all of them were officially under my personal care, a certain number were under the charge of other medical officers during my absence, from 1926 to 1930.

It should be explained that the institution in question has no *x*-ray apparatus, and has not hitherto been able to obtain *x*-ray reports as to presentations, etc.; also that it has no suitable arrangements for infants, and no incubator.

Ante-natal attendances have been very satisfactory, though instructions have by no means always been followed. In thirty-seven cases attendances were very bad. In seventy-six cases the patients were seen for the first time on their admission to hospital. Patients still sometimes prefer their own treatment for constipation, etc., and fear dental treatment; sometimes dentists have declined to extract when I wished it.

More than half the patients were primigravidae. One point brought out very clearly, though not sufficiently for statistical purposes, was that in a large number of cases pregnancy preceded marriage. The ages of the patients concerned have varied as would be expected, the youngest being 15 and the oldest 45. The oldest primigravida was 43. The longest duration of marriage before pregnancy occurred was seven years.

The average diagonal conjugate measurements, taken over part of the series only, come to 4.7 inches. Though this is very near the $4\frac{3}{4}$ inches usually considered normal, a surprisingly large number of patients were encountered in which this diameter lay between 4 and $4\frac{1}{2}$ inches. A very definite impression was gained that pelves affected by a slight degree of contraction are definitely on the increase. On the other hand, flat pelves were rarely met with. One instance of Naegele pelvis occurred.

With regard to presentations, there were no instances of face or brow presentation apart from anencephaly. There were twenty-six breech deliveries, three following failure of external version. External version was performed fifty-six times, of which fourteen were successful only under an anaesthetic. The number of occipito-posterior presentations treated by Ballantyne's padded binder has not been recorded; a large number of cases were also successfully treated by this means during labour.

ANTE-NATAL CONDITIONS.

There were forty-five admissions for ante-natal treatment; ante-natally a large variety of conditions were encountered.

Various forms of established heart diseases	24
Active pulmonary tuberculosis	7
Non-tuberculous diseases of lungs	6
Active tuberculosis of glands of neck	2
Tuberculosis of elbow	1
Venereal diseases	12
Bartholinitis	2
Glycosuria	4
Epilepsy	3
Pyelitis (pyelonephritis)	4
Erysipelas	1
Otorrhoea	3
Breast abscess	2
Salpingitis	2
Subacute rheumatoid arthritis	1
Chorea	2
Pernicious anaemia	1
Splenomedullary leukaemia	1
Fibroids	2
Procidentia	1
Pelvic ovarian cyst	1
Pelvic dermoid cyst	1

One patient, sent in as a case of ante-partum haemorrhage, was not pregnant, but had a large haemopyosalpinx.

Of maternal deformities, retracted nipples were the commonest, but in only two cases was an extreme condition seen early enough for operation. Supernumerary nipples were uncommon, appearing about five times. Septate vagina was seen twice. One patient suffering from progressive muscular atrophy was admitted twice. Rigid coccyx was encountered once. During labour eighteen patients became unmanageable, but only once was the condition definitely diagnosed as insanity of labour. Reproductive insanity occurred on five occasions—once in pregnancy, once in labour, and three times after delivery. After delivery one patient developed chorea, two developed pleurisy (one of whom later became frankly tuberculous), and two developed apparently aseptic phlebitis.

Albuminuria was met with frequently, and has been classified as slight, moderate, and severe, the severe type being that found in pre-eclamptic toxaemia. The number in each group was: slight 126, moderate 52, severe 52; in addition, eclampsia occurred four times. In slight cases regulation of the bowels and increase of fluid intake were usually sufficient treatment. Moderate cases frequently responded to a mixture of the mist. buchu co. type. These patients were often placed on a meat- and salt-free diet. Severe cases were admitted whenever possible. Colonic lavage, barley and lemon water by the mouth, and the same mixture usually sufficed to bring about rapid improvement. In eclampsia a veratrine preparation is given at the first sign of a fit, and morphine and hyoscine may be used later, with an anaesthetic for delivery; hot packs have been used.

Vomiting sufficient to be called hyperemesis occurred twice in this series. As signs of ketosis were appearing, the patients were admitted and confined to bed. Gastric and colonic lavage were carried out, and the patients were fed by the rectum. In no case did this treatment suffice,

but rapid improvement followed the administration of ox bile per rectum.

Latterly efforts have been made to find a reasonable analgesic which could safely be used by nurses as a routine, at all events in an institution. After various trials the hypodermic injection of 1/100 grain of hyoscine hydrobromide in 2 c.cm. of sterile 50 per cent. magnesium sulphate solution has been adopted. Though patients occasionally need further injections, one dose usually suffices. If given at the end of the first stage of labour the second has almost invariably been more rapid and much less distressing to the patient. This procedure has now been employed in about 200 cases, apparently with considerable benefit.

Caesarean section was performed twenty times for conditions varying from disproportion to pulmonary tuberculosis and heart diseases. In these cases the operation has usually taken place under spinal analgesia. Episiotomy was employed fifty-five times in order to avoid lacerations, and in some cases no other assistance was required. Placenta praevia was encountered on seven occasions, being four times accompanied by albuminuria. Accidental haemorrhage also occurred—four times with albuminuria and three times without. Post-partum haemorrhage occurred nineteen times, on three of which it accompanied marked albuminuria, and was usually associated with delayed separation of the placenta.

Induction of labour was performed thirty-six times. The original method employed was the insertion of an oesophageal tube into the uterus; latterly, however, in a few cases a warm solution of mercurochrome in glycerin (about 0.5 per cent.) has been injected through a catheter into the uterus. This method was first tried because of the presence of pus around the cervix. It has not been uniformly successful in the induction of labour, but has succeeded on about two-thirds of the occasions on which it was used. The labours have been uniformly free from the very mildest suggestion of morbidity.

Forceps were employed ninety-six times (7.38 per cent.). On three occasions bipolar version was performed successfully instead of high forceps. Craniotomy was performed once in this series, the child being already dead. The placenta was removed manually fifteen times, always followed by hot intrauterine acriflavine douches; none of these cases became morbid.

Notifiable sepsis occurred sixty-five times as follows:

Following intervention	16
No intervention, etc.	34
Admitted as puerperal sepsis	13
Admitted as puerperal insanity	2

An inquiry into the relation between intervention and morbidity of even the very mildest degree gives twenty-nine cases in which some form of intervention was followed by some presumably infective reaction, and 117 cases in which no sign of morbidity followed. In a few instances, patients exhibited conditions ante-natally which might have influenced the subsequent development of morbidity. Among these patients were those who were attending the local venereal disease clinic (unknown to me till later), others with forms of vaginitis and leucorrhoea, subjects of severer forms of albuminuria, and those whose gums and persons were filthy.

An attempt has been made to classify the cases of notifiable sepsis in terms of associated pathological conditions, with the following result:

Local uterine (and vaginal) infections...	36
Pelvic infections (parametritis, etc.)	7
General abdominal infection (peritonitis)	7
Blood infections	8
Breast abscess	3
Uncertain	1

Included in the above were two patients who developed mental symptoms. Two are omitted from the above list, both suffering from pulmonary tuberculosis without any evidence of pelvic infection. Another who was also suffering from pulmonary tuberculosis has been included as a case of uterine infection. One case is noted as "uncertain," the patient exhibiting mild pyrexia on the thirteenth and fourteenth days only, with no physical signs or treatment whatever.

Post-natal work does not seem to appeal to the imagination of patients so much as ante-natal work. There were only about 360 post-natal attendances, compared with about 6,700 ante-natal.

Treatment.

An attempt has been made gradually to standardize the treatment given according to the clinical type met with. A patient who shows a rise in temperature above normal, or an increase in pulse rate to 90 or more, is considered as demanding close attention. As soon as both conditions occur together the cervix is inspected and an intrauterine injection of glycerin containing 1 per cent. mercurochrome is made.

Uterine Sepsis.—Intrauterine injection of glycerin and mercurochrome is given as above. This treatment, repeated usually once but sometimes twice a day, suffices almost invariably to cure the condition. It should be mentioned, however, that occasionally offensive lochia are drained away from the uterine cavity through the catheter before the glycerin is injected. If the rise in temperature and the increase in pulse are marked, an intramuscular injection of 2 to 5 c.cm. of sterile milk is administered for non-specific shock. This also is often repeated daily.

Pelvic Conditions.—The above treatment is usually suspended when pelvic cellulitis or peritonitis appears to be developing. Hot vaginal douches are substituted, and latterly hot tampons of cataplasma kaolini (*B.P.C.*) with the addition of 5 per cent. extract. belladonnae viride have been found very useful indeed. Drainage is naturally afforded at the earliest indication. It has been found that spontaneous diarrhoea may indicate the commencement of a pelvic abscess before any definite physical signs can be elicited. A polyvalent serum is usually employed.

General Peritonitis.—Drainage and continuous rectal saline with glucose and brandy have proved the only useful remedy in my experience. I would comment, however, upon the extreme difficulty of early diagnosis. Slight distension relieved by pressure was the only sign obtained in two of my cases. A polyvalent serum is also employed for this condition.

Blood Infections.—Local treatment was always given as for uterine sepsis, and a polyvalent serum administered. Remarkable benefit has followed the intravenous injection of 20 c.cm. of a colloidal silver preparation. This has been given twice a day, but usually only once daily.

Among other remedies which have been employed from time to time are colloidal calcium given intramuscularly with apparent benefit on several occasions, and vaccines of different kinds, none of which has been markedly beneficial.

In one case in which very mild pyrexia accompanied an apparently metastatic arthritis of the knee, aspiration of the joint was performed and was immediately followed by injection of 1 per cent. mercurochrome in glycerin; the condition then cleared up without further trouble.

In addition, radiostoleum was given as routine in the latter part of the series. While we did not obtain any results comparable with those originally published by Mellanby and Green, yet it was felt that its administration was followed by definite benefit. Ovarian residue by hypodermic injection was also employed; this was found definitely active in the induction of labour, but its use was abandoned owing to the tendency to increased haemorrhage after delivery. Liver extract was used systematically for anaemia, whether primary or secondary. In some instances it was administered by hypodermic injection, as it was not very well taken by the mouth. One case of pernicious anaemia was admitted as puerperal pyrexia, and naturally did very well. In one further instance at least this measure was followed by very remarkable improvement. When used, however, in toxaemias of pregnancy, no benefit was observed to follow.

Causes of Death.

There are twenty-six deaths in this series, including those dying within a few minutes of admission. Of these twenty-six, two were ante-partum, nine occurred in patients sent in as cases of puerperal sepsis, and two in patients admitted as cases of puerperal insanity. One of the ante-partum deaths was caused by eclampsia, the other by heart failure. The eclamptic was not quite thirty-six weeks

pregnant, and had given no evidence of albuminuria until immediately before admission. A cardiac case had a bad history of alcoholism and strangeness of manner. She was sent in for heart failure, and was improving when labour came on. She then became very excited and violent, and died in a few minutes. In both of these cases post-mortem Caesarean section was performed unsuccessfully. The remaining deaths are attributed to a variety of conditions. It should perhaps be mentioned that as far as possible diagnoses were verified pathologically. The following is a table of causes:

General peritonitis following spontaneous delivery	5
General peritonitis following assisted delivery	1
Septicaemia following spontaneous delivery	2
Septicaemia following assisted delivery	1
Shock	2
Pulmonary embolism	2
Pelvic abscess	2
Influenzal broncho-pneumonia	4
Abscess of lung	1
Pneumonia developing during puerperal insanity	1
Cerebellar glioma	1
Aplastic anaemia with suppurative pyelonephritis	1
Generalized tuberculosis	1
Acute dilatation of the stomach	1
Exhaustion following acute mania	1

Some of the cases recorded in the above table merit further notice. In one of the cases of shock death followed manual removal of the placenta for haemorrhage in the third stage in a woman with marked albuminuria; in the other the patient was a very fat woman with chronic bronchitis and albuminuria, who died very soon after an easy forceps delivery. One case of pulmonary embolism followed white leg; the other, mitral stenosis. Of the patients with pelvic abscess, one was admitted five weeks after she had had her baby at home; the other had arrived very ill from West Africa suffering from pyelonephritis. The albuminuria cleared up, but the urine remained offensive and infected. Two days after the labour rigors returned, and pelvic abscess gradually developed. This was drained, but the patient died in five weeks.

Of the twenty-six patients who died, only seven had received any assistance in labour; one of the remaining nineteen was attended by her doctor in a normal labour; sixteen were midwives' cases; two were "B.B.A.'s."

An analysis was made of the infantile deaths, of which there were ninety-one in this series. In the following table the word "uncertain" refers to cases in which no post-mortem examination was made, or syphilis was suspected but not proved, etc.

	Stillbirths.	Neo-natal Deaths.	Total.	Proportion per cent.
Prematurity	5	19	24	26.3
Albuminuria	10	5	15	16.5
Fatal deformities	6	6	12	13.2
Ante-partum haemorrhage	3	1	4	4.4
Pneumonia	—	1	1	1.1
Syphilis	1	1	2	2.2
Specific injuries	5	5	10	11.0
Following difficult labour	10	—	10	11.0
Uncertain	10	3	13	14.3
Totals	50 (3.84 %)	41 (3.15 %)	91 (7.0 %)	100

The fatal deformities were extremely varied, as the following list shows. Minor deformities have not been classified.

Anencephaly	4
Exomphalos	1
Multiple deformities (all different)	3
Patent interventricular septum	1
Meningocele (occipital)	1
Meningocele (frontal)	1
Duodenal stenosis	1

As regards injuries, lumbar puncture appeared successful in saving two or three infants. The fatal injuries were as follows:

Ruptured liver	3
Torn tentorium	6
Cerebellar haemorrhage without tear	1

Most of these occurred in cases of spontaneous delivery.

It is perhaps worthy of mention that many infants of apparently very feeble vitality (excluding birth shock) responded remarkably to the administration of one to two drops of adrenaline in a small quantity of saline by the mouth every hour.

REMARKS.

1. A somewhat incomplete summary is here presented of a series of maternity cases showing a deplorably high rate of mortality of 2 per cent. If, however, patients admitted for puerperal complications whose deaths were due to other diseases are omitted, a figure is reached of 0.4 per cent. This is still very high, and yet not high enough to represent the true mortality, since some of the other diseases would not have proved fatal apart from pregnancy and labour.

2. After five years' experience with mercurochrome in glycerin it is considered that this is a reliable, harmless, and absolutely efficacious antiseptic as far as the endometrium is concerned, and, possibly, for all mucous membranes.

3. The suggestion is made that 1/100 grain of hyoscine in 2 c.cm. sterile 50 per cent. magnesium sulphate solution is a safe and fairly effective analgesic for labour, though admittedly it has not yet received sufficient trial here.

SOME OBSERVATIONS ON SYPHILIS OF THE NERVOUS PARENCHYMA.

BY

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"NATURE does not deal in schemes and diagrams: every separate individual and each case has its own peculiarity."[1] It is now generally recognized that dementia paralytica and tabes dorsalis are affections separated from each other by no distinct line, and that it is the individuality alone which determines on what part of the central nervous system the lesion shall fall; but it does not appear to be acknowledged that the same relation exists between tabes and syphilitic myelitis, the former being classed as quaternary syphilis and the latter as tertiary syphilis.

In some races in Malaya syphilitic myelitis is very much more common than in Europe, while in the same races tabes and dementia paralytica are proportionally rarer. In England Williamson[2] records only 32 cases as compared with 118 cases of tabes seen during the same period, and the opinion of many neurologists in Europe is that it is a rare disease. On the other hand, Mon Fah Chung[3] in Peking puts its incidence at 39 per cent. of all cases of spinal disease.

I record here the findings in a series of consecutive cases of parenchymatous spinal syphilis in one race—namely, the Chinese—admitted to the Singapore General Hospital during a period of eighteen months. One case of transverse myelitis with a negative Wassermann reaction and two of gummatous pachymeningitis are omitted from the series. It has been impossible in all cases to get a history of the time that elapsed between infection and the onset of nervous manifestations owing to the low intelligence of many of the patients, the frequency of multiple chancres at different times, and the fact that a true Hunterian chancre without secondary infection is rare; if present, it often passes unnoticed in consequence of being painless. Similar series have been made at the great pauper hospital of Tan Tock Seng, but as they only show the same features they are not recorded.

The series consists of two clerks, aged 56 and 45, one house-boy, aged 40, one cook, aged 33, one mortuary priest, aged 52, one sailor, aged 40, one fireman, aged 26, and ten coolies, average age 39 years—17 cases in all. All these patients had positive Wassermann reactions both in the spinal fluid and in the blood. I have divided them into groups, commencing with those that can be classified as tabes dorsalis and ending with those that approached Erb's syphilitic paraplegia.

The first group consisted of the clerks, the house-boy, and the mortuary priest, and were definite cases of tabes dorsalis. All had Argyll Robertson pupils, absence of the knee- and ankle-jerks, Romberg's sign, ataxic gait, and paraesthesia in the legs; one clerk had lightning pains, but none showed any signs of pyramidal tract involvement. The second group, consisting of three coolies, aged 48, 35, and 30, begins to show involvement of the pyramidal tracts. All had Argyll Robertson pupils and Romberg's sign, but the first had both knee- and ankie-jerks present, with a bilateral Babinski sign, and the second had increased knee- and ankle-jerks with slight spasticity of limbs, but the plantar reflex was flexor, and there was commencing optic atrophy. The third coolie, whose loss of pupil light reflex showed only on the right side, had lost both knee- and ankle-jerks, yet gave a shortening reflex in the left leg and a normal plantar reflex. The third group, consisting of two coolies, both aged 35, is only separated from the above because neither exhibited any alteration of the pupil reflexes; both showed Romberg's sign and had absent knee- and ankle-jerks, yet one had a bilateral Babinski sign with girdle pains and the other no Babinski sign, but paraesthesia and paresis of both legs. The fourth group is composed of the fireman, aged 26, and two coolies, aged 52 and 49, all exhibiting normal pupil reflexes, a positive Romberg sign, and greatly increased knee- and ankle-jerks. The fireman had also retention of urine, a Babinski sign, and shortening reflex on the left side, with hypotonia in both legs. The elder coolie had complete loss of pain sense to the level of the iliac crests, and no plantar reflex could be elicited, although he showed a shortening reflex in both legs; the younger had optic atrophy, difficulty in micturition, with shortening reflex, but no Babinski sign. The final group is composed of five cases: one cook, aged 33, one sailor, aged 40, and three coolies, aged 42, 39, and 34. The symptoms varied from those suggesting transverse myelitis, exhibited by the cook and the sailor, with complete paralysis of both legs, anaesthesia to the waist, a bilateral Babinski sign, and increased knee- and ankle-jerks (with, in the former, complete incontinence of urine and faeces, and in the latter retention of urine), to those of incomplete transverse myelitis in the coolies aged 39 and 34, and to the coolie aged 42, who showed extreme spasticity in both legs, difficult micturition, and whose sole sensory change was some tingling with diminution of localization sense in the legs.

This is a small series, but for the purpose of this note it is sufficient, since other series collected in Singapore show exactly the same features; the cases are therefore a representative consecutive series of what we are accustomed to see. The noticeable features are: (1) that the grading from pure posterior root and tract lesions to almost pure pyramidal tract lesions is too gradual to warrant the assumption of differing etiologies; (2) that the lesions of tabes dorsalis are shown most characteristically in the first group containing those patients who had not spent their life in hard manual labour—namely, the two clerks, the house-boy, and the mortuary priest; and (3) that some improvement often occurs in those cases with paralysis of the legs (which is usually of sudden onset) with the enforced rest alone, and before the commencement of specific treatment. To explain these features we can, of course, invoke the usual hypothetical toxins which, being hypothetical, will do whatever is required of them to explain difficulties—toxins of that extraordinary biological conception of a neurotropic strain of *Treponema pallidum*; truly extraordinary since, impotence being the rule in the large majority of the cases, the strain must be one with a suicidal tendency.

Considering now the pathology of the disease, with a view to confirmation or otherwise of the suggestion that bodily activity has an important influence on the consequences of infection, it may be recalled that "the type of the soil in which *Treponema pallidum* is sown in more important in determining the type of syphilis than is the strain of the organism."[4] Buzzard and Symonds note that syphilitic myelitis is more common in England among soldiers, and suggest that great fatigue, exposure, and alcohol may be the determining cause.[5]

The changes which are present in all types of syphilis, and are common to all, are the vascular changes. Beatty and Dickson write: "We regard the internal change as the result of a chronic inflammation caused by the poison of syphilis acting directly on the inner coat of the vessel, the *Spirochaeta pallida* being found in this coat, though it is also present, as already stated, in the degenerated areas of the media. The narrowing of the vessels may give rise to nutritional changes and overgrowth of fibrous tissue in the various structures to which they are distributed: or it may cause thrombosis in the vessel itself, just as do the changes in atheroma."[6] In dementia paralytica we find the main changes in the capillaries which show a perivascular infiltration in the Virchow-Robin adventitial spaces. These spaces are packed with lymphocytes and plasma cells, and occasionally there may be seen elongated cells resembling collapsed capillaries.[7] The vessel walls are thicker than normal, and the tissue is highly vascular, owing partly to the dilatation of vessels and partly to the sprouting of new capillaries, which are themselves soon surrounded with a perivascular infiltration.

The change that occurs in the vessels after malarial treatment is merely a lessening of the amount of infiltration of the adventitia and diminution of the number of plasma cells, causing them then to resemble the capillaries seen in lesions of tertiary syphilis. Similar changes are seen in myelitis, the perivascular infiltration, or rather infiltration of the adventitia, being sometimes combined with a capillary thrombosis.[8] As Mon Fah Chung notes, the thrombosis of vessels occurs without signs of inflammation.[3]

Considering these changes we should expect to find that, owing to the general involvement of the capillaries, the nervous tissue must show signs of a chronic slowly evolving condition of undernutrition. There is ample confirmation of this view: first, in juvenile paresis and tabes there is a characteristic hypoplasia of both brain and cord, and in acquired dementia paralytica and tabes dorsalis there is an atrophy of both the brain and the cord.

Microscopically we find that: (1) the degeneration is not dependent upon any inflammatory process; (2) there is no correlation between the number of spirochaetes present and the changes found in the tissues; (3) the characteristic multiplication of the nuclei of the Purkinje cells in juvenile paresis suggests more an incomplete development than any poisoning by toxins; (4) the lesion in both is chiefly manifest in parts with a small blood supply—the cortex and dorsal region of the cord; (5) the condition of miliary necrosis in dementia paralytica, the only time where the number of spirochaetes and findings correspond, is a necrosis accompanied by no inflammatory reaction; and (6) the growth of fresh capillaries indicates an attempt to supply the deficiency in nutriment. The history also seems to show interesting points, the long incubation period in both juvenile and adult cases suggesting a slowly acting cause.

The rarity of a noticeable primary sore, and the mildness or absence of early symptoms, both suggest an individual who has a high resistance to the infection, and is not likely to be suddenly overwhelmed by hypothetical toxins, which are often even incapable of producing the typical syphilitic inflammations—as witness the rarity of the usual tertiary lesions other than aortitis in these complaints.

If then we picture the patient suffering from a very slowly increasing state of malnutrition of both the brain and cord, it must follow that those parts which are called upon most frequently are likely to suffer the most, provided that the blood supply, or rather the density of the capillary bed, is the same. However, since the blood supply is not by any means equal throughout the different parts of brain and cord, the final picture will depend upon both factors—the blood supply, and the mental and bodily activities of the

infected individual. We might instance in this connexion the practical arrest of the disease which so often follows tabetic optic atrophy; as the result of this lesion all the activities are so severely affected and so much less is required of the nervous tissues, that it can continue to function at this lower level in spite of the decreased blood supply. W. M. Malamud and K. Lowenberg[9] state that an affection of the meningeal capillaries may lead to meningitis, and of the cortical capillaries to general paresis.

It is now clear why the soldier, the fireman, the rickshaw puller, and the coolie are so liable to suffer from involvement of the pyramidal tracts. In these cases the motor functions of the nervous tissue are so often called upon for such a tremendous output, since they must continue to function in spite of exhaustion, that the individual often becomes an almost senseless automaton, marching, running, or working oblivious to pain and all the finer senses, but still calling upon the motor system, including its arterial supply, for a full output of energy. The symptoms in these cases appear usually earlier than the sensory symptoms of tabes dorsalis, and it is hardly to be wondered at, considering what strain is put on the system.

Buzzard and Greenfield note in syphilitic myelitis that in some cases there is disease, or diminution, or complete occlusion of the lumen of the vessel; in others there is excessive perivascular infiltration with suggestion of slowing of the circulation and blood stasis, and in further cases paralytic vaso-dilatation ensues with very moderate perivascular infiltration and capillary thrombosis. In all cases there is, again, interference with the normal blood supply to the cells.

We have, further, a striking confirmation of this view in the more modern treatment with malaria of dementia paralytica. Malaria is supposed to increase the amount of antibodies and spirocides present in the blood and cerebro-spinal fluid. To those who know malaria as the disease above all others that reduces the resistance of an individual to an infection, and renders him more liable to fall a victim to any contagious or infectious disease, the hypothesis that induced malaria has the opposite effect in syphilis appears to be a totally unjustifiable assumption. The real effect malaria or other infections have in these cases is to give what might be termed a histamine shock effect—an action that causes dilatation of the capillaries, increasing the blood flow through them, and at the same time bringing more nutrition to the starved nerve cells as well as to the walls of the capillaries and tissues surrounding them. Only in this way can the effect of malaria without chemotherapy be explained, and also the fact that, although in some cases of late quaternary syphilis the spirochaetes appear to have died out, the degeneration of the nervous tissue progresses, and progresses in proportion to the strain thrown upon it. Again, one can note that the actual fever present has no relation to the ultimate curative effect of the procedure, except that if it is too severe the secondary debilitating effect damages the patient irretrievably. A similar effect can also often be seen in tabes after an irritant dose of *x* rays to the spinal cord, where a temporary amelioration of the symptoms frequently occurs as the blood flow increases in the irritated tissues.

In conclusion, I have brought forward evidence that the later manifestations of neurosyphilis must be regarded as only a result of the general vascular disease. They appear to be due to a slow starvation of all the nervous tissue, as well as of the tissues of the body; all through the body those tissues will first show signs of degeneration, which, having a small capillary bed, are yet required to do most work under conditions which render them unable to replace sufficiently the broken-down products of their activity. The areas with the least blood supply stand the least strain, and the more vital centres, being supplied better with blood, hold out the longest.

The *Treponema pallidum* is an organism which, through the centuries, has almost learned to live in symbiosis with man. Although possibly emitting, containing, or manufacturing some toxin, this toxin usually has no very virulent and rapid effect upon the tissues.

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Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

TORSION AND GANGRENE OF TUBE COMPLICATING UTERINE PROLAPSE.

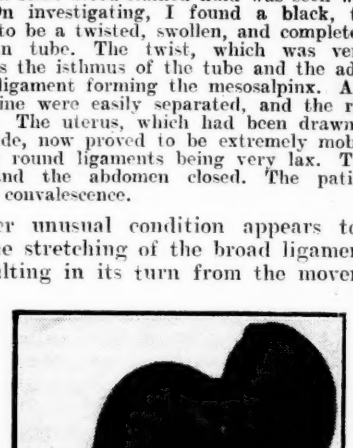
The following case seems sufficiently rare to merit publication.

A multipara, aged 54, had suffered from complete uterine prolapse since the birth of her last child eighteen years previously. The condition was controlled by means of a large "watch-spring" pessary. Recently, while on holiday in America, the patient consulted a doctor for attacks of slight pain in the right hypogastric region from which she had been suffering for a few months, and he advised removal of the pessary. When this had been done she was very pleased to find that the prolapse did not recur, though the occasional attacks of pain persisted.

Some months after her return to China she attended a social function, where she danced, and several hours later she was seized with acute abdominal pain exactly in the locality of the former attacks. I saw her an hour or so later, and found considerable tenderness and some resistance over the right hypogastric region. Her pulse and temperature were both normal, but a pelvic examination revealed a tense and painful swelling in the region of the right vaginal fornix.

A laparotomy was performed shortly afterwards, and on opening the peritoneum some blood-stained fluid was seen welling up from the pelvis. On investigating, I found a black, tense swelling, which proved to be a twisted, swollen, and completely gangrenous right Fallopian tube. The twist, which was very tight, had occurred across the isthmus of the tube and the adjacent portion of the broad ligament forming the mesosalpinx. A few adherent coils of intestine were easily separated, and the right tube and ovary excised. The uterus, which had been drawn over towards the affected side, now proved to be extremely mobile, the broad ligaments and round ligaments being very lax. The uterus was ventrofixed, and the abdomen closed. The patient made an uninterrupted convalescence.

This rather unusual condition appears to have been caused by the stretching of the broad ligament and mesosalpinx, resulting in its turn from the movements of the



Photograph showing the blood-distended and completely gangrenous right Fallopian tube removed, with the right ovary.

prolapsed uterus. I think it probable that a partial torsion had been present for some time, causing the slight attacks of pain, and anchoring the prolapsing uterus. Some sudden and unusual exertion made the twist acute, effectually strangulating the vessels in the mesosalpinx and rendering the tube gangrenous. There was no evidence of antecedent pelvic inflammation; as will be seen from the photograph of the specimen, the tube was greatly distended by blood, but the ovary seemed normal.

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ATYPICAL FORMS OF CEREBRO-SPINAL FEVER.

Cerebro-spinal fever, as is well known, may run its course entirely without meningeal involvement or with late involvement of the meninges, the disease remaining in the septicaemic stage. Such cases, however, may easily be overlooked, so notes on a series may be of interest.

Last year, as a result of three or four cases of meningitis having been admitted and diagnosed as cerebro-spinal meningitis, a careful look-out was kept for further cases, with the result that 59 others were admitted to hospital. The ages of the patients ranged from 3 months to 35 years; the majority were, however, under the age of 20. Of these cases, 2 were proved to be of tuberculous origin, 1 was pneumococcal, and 1 anterior poliomyelitis; 1 was admitted as enteric fever, and 2 as tuberculous meningitis, while 1 case thought to be puerperal pyrexia proved to be cerebro-spinal fever. The remaining 55 were diagnosed as cerebro-spinal fever clinically.

The cases varied very considerably in severity; in many there was only a few days' illness with some pyrexia, a positive Kernig's sign, and some stiffness of the neck; the mental condition was unimpaired, and rapid improvement followed serum therapy. In other cases there were two or three days of illness with intervening periods of apparent good health, about 50 per cent. of the patients eventually recovering or passing into a stage of meningeal involvement. One such case showed a relapsing septicaemic stage lasting just over two months before signs of meningitis occurred and death supervened; another ran an indefinite course for four months, the patient being admitted to a tuberculosis sanatorium for observation, where the disease was finally diagnosed. Several cases in which diplococci had been found were followed by paralysis, simulating infantile paralysis, usually in a lower limb, but twice affecting the upper, I think as a complication of the cerebro-spinal fever, but since cases of anterior poliomyelitis were occurring a possible association of the two diseases could not be definitely excluded.

Deafness was seen as an early symptom in two instances, and as a later condition in one. Relapses were common. Kernig's sign frequently remained for several weeks after the patient was otherwise well; in all cases it was very gradual in onset. As an early sign the stiffness of the neck on pulling the head forward was most valuable in diagnosis, and pain in the neck was commonly complained of. Conjunctivitis was very frequent as an early sign; herpes labialis was frequently seen in even the mildest cases. A purpuric rash was only twice noted, and then as a very early sign. The "elbow sign" was observed in 16 cases. The headache was frequently distressing, and early delirium was usually present. The "neck sign" (Brudzinski) was demonstrable in many of the more severe cases.

The spinal fluid was under pressure in all cases, and in infants the fontanelles were tense. In most cases it remained clear, and only in three did it become frankly purulent; it was definitely turbid in three. Very few meningococci were found; usually, after repeated specimens had been thoroughly investigated, one or two diplococci were demonstrated in about 50 per cent. of the cases, the prognosis being very adversely affected, only two or three "positive" cases recovering. The finding of diplococci was extremely difficult and required long and patient search, three or four specimens frequently being required before they could be demonstrated; indeed, in one case eight specimens were examined before confirmation of the clinical symptoms was possible. In some fluids very rapid changes occurred from day to day; they were negative as a rule on the first, second, and third days of illness, and from the fourth day onwards "positives" were possible.

The average stay of the patients in hospital was three weeks. The mortality rate was 44 per cent. Among the relatively few complications observed were: jaundice 1, melaena 3, haematemesis 2, ulcerative endocarditis 2, arthritis 2, panophthalmitis 2, and parotitis 1.

The difficulty in obtaining bacteriological confirmation is interesting and instructive, lumbar puncture clearing the matter up only occasionally, and blood culture seldom affording any evidence. In the first case probably the cord was rarely affected at all; such meningococci as were found in small numbers were accidentally there as part of the general condition, any involvement of the central nervous system being possibly of the posterior basic type. No increase in the bacteriological findings resulted from fluid obtained from cistern puncture, except in the case of tuberculosis. Again, many of these cases were undoubtedly admitted when suffering from relapse, the primary attack having been missed or no doctor having been called in; these relapses probably accounted for some of the difficulty at least, and the failure of the blood cultures.

Sunderland. Eustace Thorp, M.B., B.Ch., D.P.H.

Reports of Societies.

OBSTETRICS AND GYNAECOLOGY.

A meeting of the Obstetrical and Gynaecological Section of the Royal Society of Medicine was held on October 17th, with the president, Sir Ewen Maclean, in the chair.

Vaginal Metastases.

Dr. Gilbert Strachan gave a paper on vaginal metastases in uterine carcinoma. In a series of thirty cases of carcinoma of the body of the uterus he had found these metastases to be present in 16.7 of his cases. One case belonging to Sir Ewen Maclean was added. These cases fell into three categories. In the first category were the two cases in which vaginal metastases were present before operation, and when the patients were first seen. In one of these, curettage had been performed two weeks previously. In the second category were three cases in which metastases were discovered for the first time at varying intervals after hysterectomy. The intervals were six months, five months, and nine years. In the last case, while the original condition of "cancer of the womb" could not be verified, the presence of the adenocarcinomatous nodule lent support to the history. In the third category was the single case in which adenocarcinoma was found, first in the vagina, and only eight months later in the uterus, with very rapid development and spread. In none of these cases was there any submucous vaginal infiltration extending downwards from the uterus. Three main methods of metastatic formation occurred: by direct implantation, by lymphatic extension, or by blood stream transference. Dr. Strachan discussed at some length the various types of metastatic extension and their influence upon prognosis and treatment. In cases of metastatic deposit with an early carcinoma of the body, consideration had to be given whether hysterectomy is justified, followed by radiation or excision of the vaginal nodule or even by removal of the vagina. Dr. Strachan's inclination was rather in the negative direction. He stressed the necessity for carrying out a careful examination of the vaginal mucosa in all cases of corporeal carcinoma of the uterus. The occurrence of metastatic nodules in the vagina in cases of carcinoma of the body of the uterus constituted not only an interesting pathological problem, but is at the same time an important clinical factor, as it represented a prognostic feature of grave omen in what might otherwise be a favourable case.

The President said that the facts of his case included in Dr. Strachan's series were as stated. He would add a further one in which the patient was a woman aged 68, a one-para, who was seen by him, giving a history of blood-stained vaginal discharge for four months, and practically no other symptoms. Hysterectomy was not permitted, although the exploratory curettage revealed typical adenocarcinoma of the body of the uterus. Forty-five millicuries of radon were inserted into the cavity for twenty-four hours. One month later nodules were found in the lower part of the vagina, which, on microscopical examination, were found to reproduce the histology of the uterine scrapings. Three months after the original investigation, subcuticular nodules appeared in the calf of the left leg, the anterior margin of the left axilla, and in the left

suprasacral region. These again were found under the microscope to show the same appearances as the vaginal nodules and uterine scrapings—the vaginal and skin nodules showing additionally, of course, the dermal tissues. Dr. Roy described a case of carcinoma of the body of the uterus with vaginal implantations, also two cases of cervical cancer with recurrent vaginal growths. He suggested that curettage might disseminate cancer cells. Dr. Fairbairn discussed the mode of dissemination in cases of cancer of the body of the uterus, and considered the blood stream as the most common method. Dr. Strachan replied that lymphatic spread was the generally accepted view, but that the proof of this was not very definite.

Practice of the East End Maternity Hospital.

Dr. W. H. F. Oxley read a paper on the organization and methods of practice of the East End Maternity Hospital. Since its establishment in 1884, this institute had attended 51,487 cases, with a maternal death rate of 1.35. The present paper dealt with the last five years' work, comprising 10,376 cases, with a death rate of 0.48 from puerperal causes, or of 0.67, including incidental deaths. The hospital differed from many in that the routine work was done by midwives, and the general practitioners who formed the staff were called to abnormalities only. Married women of the working classes were attended without any selection on medical grounds. Very few emergencies from outside sources were admitted, so that the patients formed a true sample of the child-bearing population of the district. All pathological conditions occurring in its patients were attended by the hospital. Ante-natal selection of abnormal conditions was made by the midwife in charge of that department. Occipito-posterior positions were considered to be serious abnormalities, and they were the commonest indications for forceps. Attempts to rotate them ante-natally met with a qualified degree of success only. Ante-natal version was successful in about one-half of the cases of breech presentation. Great care in delivery was practised, with the result that the special dangers to the child—namely, birth trauma and asphyxia—were very much diminished, and it was therefore suggested that cases should be left as breech in teaching hospitals, in order to give the pupils as much experience as possible in breech emergencies. The induction rate was only 1.2 per cent., and the forceps rate only 2.9 per cent.; no craniotomies were performed, and only one Caesarean section. It was considered that in many hospitals an unnecessary number of obstetric operations were performed. There were 121 consecutive cases of ante-partum haemorrhage treated, without a maternal death. The success was put down largely to the routine use of saline injections. The incidence of sepsis was low, and the means taken to guard against it were described. Treatment of local sepsis was in many cases by curetting. The operation was successful, and appeared to be free from danger. There were five deaths among in-patients, two on the district, and three in emergencies. There were no deaths from eclampsia, haemorrhage in booked cases, or sepsis in the following normal labour. The two deaths on the district were due to incidental and not puerperal causes. Comparison of the maternal death rate with that of the two metropolitan boroughs from which the bulk of the cases were drawn, showed that the expected death rate had been reduced by 75 per cent. The stillbirth and neo-natal death rate had been reduced, but not by the same amount, and it was shown that the unknown causes of these two events accounted for at least 3 per cent. of births. The successful work of the hospital was stated to be chiefly due to sympathetic co-operation between doctors, midwives, and patients, together with carefully thought-out organization.

The President offered congratulations to Dr. Oxley on his excellently compiled paper, dealing with the records of a veritable obstetrical oasis. The paper would attract wide attention, and might tend to modify the insistence on some of the obstetrical methods and equipment which, as teachers, they were wont to set forth. He was interested to note that Dr. Oxley, with scientific candour, said that in a neighbouring institution, where the methods in vogue were substantially different from those employed by himself and his colleagues, the results in terms of mortality and morbidity were almost as satisfactory. He gathered that whilst reference was made to benefit accruing from blunt curettage in certain of his cases with early puerperal pyrexia, Dr. Oxley would regard anything like routine curettage in puerperal infection as a dangerous procedure. He was sure that the paper would evoke a most helpful discussion.

Dr. Fairbairn said that the successful methods were those which encouraged natural function. Mr. Rivett thought that the continuity of the methods of the medical and nursing staff, and the tradition of the work, had much to do with the success of the hospital. The early exploration of the uterus in cases of sepsis might probably give better results than when performed several days after the onset of the symptoms. Mr. Wyatt congratulated Dr. Oxley on his paper, but with regard to the curetting of the uterus for cases of local uterine infection, he thought it a dangerous procedure unless in very skilled hands. He himself had had over 500 cases of local uterine infection to treat in the North-Western and South-Western Fever Hospitals, and no intrauterine manipulations had been done with the exception of injecting sterile glycerin. All these had done well; some had taken some days to settle, but were not seen until the infection had been present some days. With regard to the cause of death when the foetus was born macerated, at St. Thomas's Hospital in over 50 per cent. of cases signs of syphilis were found either in the foetus or in the parents. Dr. Theobald did not agree that local interference with the uterus in sepsis was advisable. Dr. Oxley, in his reply, defended the use of the blunt curette, but did not wish to press this, in view of the opinion expressed against its employment.

PUBLIC HEALTH EDUCATION.

At a meeting of the Section of Epidemiology and State Medicine of the Royal Society of Medicine on October 24th, Professor Major Greenwood, F.R.S., delivered his presidential address, taking for his subject some aspects of public health education, more particularly from the point of view of epidemiology.

Professor Greenwood defined epidemiology as the study of disease as a mass phenomenon, a way of looking at illness by focusing attention, not upon the sick individual, but upon the group into which, conceptually, the set of sick individuals could be merged. The majority of pupils at the London School of Hygiene and Tropical Medicine, where he taught, were recently qualified medical men and women. It was regarded as axiomatic that epidemiologists must be medically trained, and a suggestion that, for example, a medical officer of health might be admirably efficient without having had any formal medical training would be regarded by most people as a bad joke. As one who had been brought up in the atmosphere of general practice, the speaker remarked that he was not likely to underestimate the value of medical experience. Anybody who had had that upbringing and had passed through the ordinary undergraduate medical course without having had burned into him an impression of certain human realities which he would carry to his grave must be unteachable. Such a man's conviction that there were myriads of facts vitally important in the art of healthy living, which the mere statistician or the mere office epidemiologist could not consider, was never to be shaken; such an experience and training would save many statistical and epidemiological blunders. But few of those who had grafted hospital training on to intimate medical experience came to learn epidemiology, and a mere undergraduate training in medicine was very far from being an ideal form of preparation for the study of that subject. So far as the future of epidemiological research or the provision of competent teachers of the subject was concerned, it was a matter of relatively minor importance whether qualified medical men and women were attracted to this branch or not. If it could attract able young people who had had any sort of scientific education, he would have no doubt about its

scientific future. Nevertheless, the pupils must be in the majority of instances young medical graduates, because the evolution of the public health service imposed more and more upon its junior members duties which were essentially clinical. Nobody would maintain that the most intelligent of laymen could acquire the technical clinical knowledge requisite for the discharge of these duties save by following the *via dolorosa* of the complete hospital curriculum.

Virtues and Vices of Medical Training.

Most pupils would have the virtues and vices inculcated by their particular system of medical training. While no emphasizing was needed for the virtues—the schooling in exact observation of particular facts, and the subduing of the most thumby fingers to the precise execution of delicate manipulations—he must call attention to the vices. John Stuart Mill said he had never heard an argument from the eminent Cambridge men of his time which was worth anything. Whether that was just to the Cambridge men of a century ago, he could not say; it was true enough of young medical graduates now. As a class they were as helpless as children in conducting an argument in general terms. No doubt this was partly due to "mere illiteracy"; to be unable to write one's own language correctly was a drawback when the discussion must be conducted in ordinary words and not in well-defined symbols, and as Professor Dean had pointed out in an admirable article in the *British Medical Journal* (September 6th, p. 341) a premium was placed upon illiteracy. But this was not the whole explanation, for very good arguments had been presented in very bad English. More of the explanation was to be looked for in the consideration that emphasis in medical teaching was laid upon the practice of an art. The student's interest was concentrated upon mastering the intricate details of how to descry the signs of a condition and carry out the prescribed treatment. Undergraduate medical training was essentially technical, and there was a sound reason why it should be so. A system of dogmatic technical instruction led to a certain gain which was obvious to every practitioner, and a problematical loss which was not obvious. "Give a young man plain rules as to when to resort to appendicectomy; make sure that he can operate (or, if not, can telephone to somebody else who can), and it is odds on that he will save some lives that would have been sacrificed by a practitioner without that knowledge. That he may, as a set-off, be manufacturing a number of incurable psychoneurotics is a remote consideration. He has not to strike the balance; the epidemiologist *has*. The teacher of epidemiology has to explain to young practical men, contemptuous of and wholly untrained in abstract reasoning, that all epidemiological conclusions are based upon a weighing of probabilities."

Epidemiological Science a Balance of Probabilities.

After instancing the epidemiological history of typhoid fever in this country as an illustration of his thesis, Professor Greenwood went on to say that it was the duty of a teacher to inculcate in the epidemiological field the method of a judge in equity; the technique was different, but the principle was the same. There was, however, a danger which he himself had not escaped. It was not difficult for a moderately competent teacher to convince his students that much that was believed and used as the justification for acts in sanitary administration had no secure logical basis, and that many of the great pioneers whose names adorned the façade of the London School of Hygiene and Tropical Medicine often reasoned ill. A youth who had been brought to that point was in imminent peril of being changed from an irrational dogmatist into an ignorant sceptic. It must be made equally clear that, while for all men conscious logical reason was a principal instrument of finding truth, and for most men the only trustworthy instrument, great men attained great truths by other means. The Newtons and Einsteins divined truth by an intuition, or perhaps by the unconscious synthesis of many intimations. Men less great, but whose mental powers far surpassed the common stature—the Chadwicks, the Simons, and Freuds—divined truths, but could not test their convictions by a conscious process of reasoning, and might often deceive themselves with sham intellectual tests. Chadwick's statistical blunders and Simon's scientific opportunism were faults, but these men were very great because they were penetrated by a sense of the "mysterious incorporation of the human race" (Burke's words), which was a wisdom more valuable to the officers of a public health service than even the calculus of correlations. He pleaded that an outline of social history should be given to public health students. When they understood its examples of right things done for wrong reasons, and wrong things done for what seemed to be right reasons, they would understand why very good reasoners, who were also wise men, had not always been convinced by crucial experiments in the laboratory. In his own work in the division of epidemiology and vital statistics at the London School he did not set himself to make mathematical statisticians or medical historians of his pupils; but he did try to arouse in them such interest and give them such technical first aid as to fit those who cared to do so to study statistical methodology and medical history for themselves.

The Aim of University Teaching.

It was common in England to muddle up education and technical instruction in university teaching. Those who were to spend their lives in the public health service needed both, and unfortunately they had to be acquired in the same school. The technical knowledge which was at once essential and capable of being learned in a university school was not very extensive. Some knowledge of administration, law, and routine duties must be thoroughly acquired, and also such a knowledge of chemical, bacteriological, and statistical methods was essential as would save an ordinarily intelligent man from being wholly at the mercy of experts. But the present curriculum was more ambitious. A great deal more bacteriology, chemistry, and statistical epidemiology was being taught than would suffice to enable a man to ask "experts" intelligent questions, but not nearly enough to give him a real command of any one of the techniques. The notion that the young diplomates in public health were expert bacteriologists, chemists, or epidemiologists in the technical sense was absurd. Most of what was taught had institutional value in the proper sense of university teaching. He believed the primary duty of university teachers was institutional, not technical, teaching, and the present legal requirements made it hard to perform that duty well. He gave some reasons for thinking that now and for a generation to come students trained for the public health service would not intellectually be the pick of the undergraduate schools. For the ambitious man, without any inner sense of a "call," the public health service offered few temptations, and for the man with a "call" the attraction of the public health service was still but faint in comparison with that of the laboratory branches. On the other hand, it was necessary to attract those who, in an insecure world, were looking for something relatively safe. Some men could be imbued with the scientific spirit only in a bacteriological laboratory. Others, having had a glimpse of the pageant of history, or having tasted the odd pleasure of numerical analysis, made cultural progress; in a bacteriological laboratory they were mere "destroyers of apparatus." Both these groups might leave their school with a fair measure of scientific culture, if they were allowed to follow their natural bents, but all were stretched alike on the Procrustes bed of the curriculum.

The Exceptional Student.

Professor Greenwood then pictured what would happen if a quite low minimum of technical knowledge was defined as that which an entrant to the public health service must possess, and a qualifying examination were instituted on such minimum requirements. Those who had passed this preliminary test could then devote a year to studying one of a series of branches of science, such as chemistry and physics, or bacteriology, or epidemiology and statistics, or public administration, and submit to a final examination confined to the chosen group. But everyone could guess

what would happen if such a scheme came up for real consideration. Various influential persons would insist that certain groups of facts—a different group with each of them—must be known by all public health officers; the spirit of compromise would prevail, and in the end the qualifying examination would be pretty much what the D.P.H. examination was now, and Part II—the only part of real educational importance—would be made optional or dropped altogether. No legal reform held out promise of improvement. The fact was that the proportion of highly educable persons was small, that the qualities which fitted a man to rise above the common level were the undemocratic privilege of not one in a thousand, and that the system of university training apt to make that one in a thousand conscious of his powers, and help him to use them, was in the nine hundred and ninety-nine other cases largely waste of time and money. Yet there was a valid answer to this pessimism—namely, that the one in a thousand was the salt of the earth, and to encourage and foster him it was wise to permit much waste. The task was to devise a curriculum which would benefit the many ordinary men and not stunt the growth of the exceptionally gifted. The time might come when university departments of any size would have as their administrative head a man with a sufficiently creditable scientific record not to be hostile to research, but not himself a research worker. Conjoined with him would be a genuine poetic worker, free to come and go as the spirit moved him, free to teach or not to teach, as he thought fit. If such a scheme was financially impossible, the department should be ruthlessly closed down. In the meantime they must struggle on as best they could. It could not be many years, in the present state of national impoverishment, before a halt was called, and people asked themselves whether the present expenditure on university education and research could be justified. Then they might discover that a good deal which went on in universities had nothing in the world to do with university education, and almost as little to do with real research; the result would be a very drastic reconstruction.

A vote of thanks to the president was proposed by Dr. F. E. Fremantle, M.P., and seconded by Sir William Hamer. Dr. Fremantle remarked that he had never realized that a statistician could be such a guide to truth. His own study of statistics had led him to infer the opposite!

HEAT STROKE.

At a meeting of the Royal Society of Tropical Medicine and Hygiene, on October 16th, Dr. Frank Marsh, pathologist to the Anglo-Persian Oil Company, read a paper on the etiology of heat stroke and sun traumatism.

Dr. Marsh gave a description of his company's medical organization, which included a central hospital at each of the three towns in South Persia on the company's 160 miles length of pipe-line. These hospitals had a total of 439 beds, and served 26,000 of the company's employees, as well as the very much larger populations of the native towns; they were all equipped with operating theatres, pathological laboratories, and *x*-ray apparatus. The medical staff comprised seventeen doctors and twenty-six European nursing sisters. During last year 131,925 persons were treated in the hospitals or as out-patients. In the Persian Gulf littoral the atmospheric temperature for two or three months of the year ranged between a day maximum of 125° F. and a night minimum of 85°. The European had to sweat continuously to keep his skin temperature at such a level that the circulating blood could be efficiently cooled; urine was passed perhaps only once a day, and usurpation of the kidney function by the sweat glands might occur. Maladies due to exposure to heat in the absence of sunlight were common among workers in deep mines and stokers on coal-burning steamships. Illness following exposure to the sun might simulate the heat exhaustion and heat hyperpyrexia of miners and stokers, and occasionally even heat cramps had been observed in manual workers under a hot sun who had access to ample water. In addition to these well-known phenomena, symptom-complexes known variously as "sun traumatism," "sunstroke," and "solarism" were described in medical textbooks, where they were attributed to the rays of the blue-violet end of the spectrum—elements in sunshine rather than heat. During the summer of 1929 in South Persia an endeavour had been made to discover and establish some of the factors principally involved in "sun traumatism"; forty experiments performed on rabbits were described by Dr. Marsh. Evidence was obtained indicating that the heating rays of the sun were the sole cause of the symptoms of "heat stroke" in exposed experimental animals, and probably also in "heat stroke" occurring naturally in man. Sunstroke did not ensue in a series of rabbits with shaven heads left exposed to the sun for long periods of time; the animals only suffered when the blood heated by circulation through the hot skin of the rabbit's head had raised the temperature of the whole body to "heat stroke" level. The symptoms of this condition produced in experimental dogs in the absence of sunlight, in the experimental rabbit fully exposed to tropical sunlight, in the rabbit exposed to shade temperature above 115° F., and when it occurred sporadically in a human case (after making all due allowance for the difference between a sweating and a non-sweating animal) were shown to be identical. The conclusion was that "sunstroke," "heat stroke," "heat exhaustion," "insolation," "sun traumatism," and all the host of diseases with varied symptomatology associated with "touches of the sun," could be replaced by the one disease, "hyperpyrexia due to heat," as originally suggested by Sir William Willcox.[1] It was true that hyperpyrexia due to heat was complicated in man by the effect of sweating on the concentration of salts in the blood, but, none the less, the essential phenomena of hyperpyrexia due to heat were independent of this alteration of the salt concentration in the body, since they occurred in the non-sweating dog and rabbit with no salt depletion. Dr. Marsh added that the company's medical service had evolved an original and comprehensive scheme for the prophylaxis and treatment of heat stroke. At each of the hospitals there was a specially cooled ward in which the air was kept dry and at a temperature of about 65°, even when the shade temperature outside was 130°. Heat-stroke cases and all cases of fever in outlying stations were kept during the heat of the day until the cool hours between midnight and 5 a.m. in a cold storage chamber attached to the local ice plant. During the coolest part of the night they were placed in a fast and comfortable ambulance and taken to the nearest central heat-stroke ward, where they remained until complete recovery had occurred. As a result of these measures the incidence of heat stroke had been greatly reduced, and it had almost ceased to count as a cause of invalidism.

THE PROPHYLACTIC AND THERAPEUTIC VALUE OF VACCINES.

At a meeting of the Medical Society of London, on October 27th, with Dr. R. A. Young in the chair, Sir Almroth Wright opened a discussion on the prophylactic and therapeutic value of vaccines.

Sir Almroth Wright said that about twenty-eight years ago he first wrote a paper on vaccine therapy in which he suggested that the physician of the future would be an immunizer—he meant by that, a vaccine therapist. To-day the position had to be reconsidered, and he recalled the state of the medical world when vaccine therapy arrived. Four methods of treating bacterial disease had been considered: (1) the expectant method, in which nothing was done at all; (2) surgical extirpation, as in the removal of tuberculous glands; (3) serum therapy, the injection of blood derived from animals; and (4) antiseptics. Expectant treatment, whether due to callousness or defeatism, was an unsatisfactory method. Extirpation was a procedure introduced by the surgeon, and it was assumed that the whole of the bacterial infection could be excised; when it was found that a second operation came quickly after the first, and that the first operation seemed to have favoured the growth of the glands, the method was discarded by the surgeon himself. Serum therapy had justified itself in connexion with diphtheria antitoxin, and it was assumed, as a result of one of those

[1] *British Medical Journal*, 1920, i, 392.

generalizations due to ignorance, that what happened with regard to that organism would recur with every kind of microbe. With regard to antiseptics, the laboratory study of these was, he thought, initiated when he was in South Africa. People began treating pneumonia, which produced a heavy mortality, by giving creosote or other antiseptics by the mouth. The ordinary use of antiseptics was applied very largely in the great war. The conditions at the base in the early part of the war were that every wound was foul, and that the treatment of foul wounds with antiseptics did not make them any better. That was due to the fact that in these foul wounds the fluid was corrupted; trypsin had passed into it, and in trypsin-corrupted lymph or serum every micro-organism would grow enormously. There were two methods of treating wounds which gave good results in the sense that they got rid of, or restricted, this infection. One method introduced salt solution into the wound; this produced a great flow of lymph or serum, and killed every micro-organism except a few, such as the staphylococcus and streptococcus. The other method was that of Carrel, which was successful in keeping a wound clean, but, he believed, never made a wound clean. These two methods he bracketed together because both were productive of a flow of serum into the wound; when the wound was in that condition it could be closed. Then Professor Fleming devised certain methods, which ought to be taught in every medical school, to demonstrate that the introduction of antiseptics into a wound, or into body fluids or lymph itself, only made the condition worse. One of these methods was the culture of living pus, and another illustrated the effect of carbolic acid on leucocytes in a lined tube.

Since the period of which he was speaking the method of chemotherapy and that of bacteriophage had come forward. Chemotherapy was an improved form of antiseptic treatment. Ehrlich believed that the agent "606" entering the body would kill the spirochaete of syphilis and nothing else. It was found that "606" exerted a lethal action in serum upon the staphylococcus and the streptococcus, and since then Dr. Colebrook had worked a great deal on the matter with regard to haemolytic streptococci in connexion with puerperal fever. It was found that "606" and other arsenicals did kill the haemolytic streptococcus in the blood, but here came in the difficulties of the chemotherapist. It was not a mere question of finding an agent which, put into the serum, would kill the micro-organism; one had to find whether, when in the blood, it killed the white corpuscles at the same time as it killed the staphylococci and the streptococci. Upon this depended how high the dosage could be carried. It turned out that this drug would kill streptococci, but only after three hours, and a percentage of arsenicals was wanted which was just short of what would kill the blood corpuscles. In practice, all one could say was that the results were doubtful. There was no drug which would kill the micro-organism only without poisoning the white blood corpuscles. During the war Carl Browning proposed to use flavine in killing micro-organisms in wounds, stating that it was a drug which acted in the serum. It did not kill the white blood corpuscles instantaneously, but it inflicted on them a certain amount of damage; it was found that when flavine was put into a wound it was absorbed by the muscle, which was stained yellow, and picked up by the dressings and combined with a great number of tissues, so losing its power.

From this story of failure they were thrown back upon the method of immunization. Sir Almroth Wright said that when he introduced vaccine therapy he had it in mind that the tissues which were infected in the case of local infections were doing their best to kill the micro-organisms, but that other tissues in the body were idle; he had thought that if vaccines were injected into some of these idle and healthy tissues they might produce some particular substance not wanted there which would go round and help where it was wanted. He had the greatest objection to applying any method until he knew by laboratory experiments that it was going to do some good. Therefore, the method of the opsonic index was developed. One valuable lesson learned was that with too large a dose of vaccine a negative phase occurred. This question of a negative and a positive phase had rather moved people to mirth, but it was a very serious factor. Further, it was learned that when the infection reached a certain period bacterial products entered the blood stream from the local lesion; such auto-inoculation caused pyrexia, and again gave rise to negative and positive phases. All this worked up into the formulation of some definite rules of dosage. A man with few micro-organisms could be given a very large dose, but when the micro-organisms were present in large numbers the dose must be restricted very considerably. The smaller the infection the larger the dose; the bigger the infection the smaller the dose. When a man was auto-inoculated, like a tuberculous patient with high temperatures, very little good would probably be gained by vaccine therapy. One of the most important papers on vaccine therapy had been written by Shattock and Dudgeon, who found that leucocytic efficiency had to be taken into consideration as well as the power of the serum. The white blood corpuscles, if the microbes were accessible and the wound was healthy, could kill both the streptococcus and the staphylococcus. But the conditions prevailing in infections were not of this kind, and one could not trust to phagocytosis being complete. Sir Almroth Wright indicated with the aid of diagrams the results of experiments made on his own blood. He showed that when there were minimal numbers of organisms in the blood the white blood corpuscles which were controlling them might miss them and the organisms survive; when more microbes were put in, the process of killing began. In addition to the organisms being killed by the white blood corpuscles, they were killed also by the serum; when inside the blood the killing was very nearly complete; he thought it must have been effected by the fluids and not by the white blood corpuscles, because the latter amounted only to 2½ per cent. of the blood volume.

In conclusion, he addressed himself to the question as to when vaccine therapy ought to be employed. Obviously it ought to be applied in incipient infections and localized infections. At present, people with septic fingers and septic wounds went to the casualty department, where surgical methods were employed of opening up the wound, and antiseptics were used. So far as he knew, there was no casualty department using vaccine therapy, and he humorously suggested that a decree should be issued by the Ministry of Health that vaccines be used in such case. Another kind of case which awaited vaccine therapy was that of long and grave infections; these cases were treated, so far as he knew, only by the expectant method. Those in charge did not want the responsibility of testing vaccine therapy or immunotherapy, but they were cases which required all the skill that could possibly be brought to bear upon them.

Discussion.

Professor JOHN EYRE thought that Sir Almroth Wright had placed rather too much stress on the action of the wandering leucocytes. The antibodies in the serum still had their work to do in spite of the prominence now given to leucocytic action, and many of Sir Almroth Wright's experiments were explicable only on the ground of an excess of bacteriolysin as well as an excess of leucocytes. In pneumonia, although the phagocytic power of leucocytes was increased, the large volume of antibody (pneumolysin) occurred in the blood stream after the leucocytes had apparently been destroyed; the crisis then ensued and the condition improved.

Dr. H. H. MILLS, speaking as a general physician, said that an increased number of people came in the autumn or beginning of winter for a dose of anticatarrhal vaccine. Questions of minute pathology were, of course, impossible for a general physician, but the method he had adopted was one which was suggested to him by Lord Balfour, who took a very great interest in medicine—namely, to use a mixed vaccine, so that one or other constituent might possibly hit the "bull's eye." The fact that people came regularly for this anticatarrhal vaccine was, he thought, some evidence that it had value. The question of localizing the particular organism was often very difficult, but from the clinical point of view this work was only just beginning, and a therapeutic agent most valuable from the general physician's point of view might emerge.

Dr. Geoffrey Marshall remarked that vaccines had come to be used on an enormous scale; there was no doubt that the absence of enteric fever must be attributed to vaccine inoculation. Most clinicians believed in their use not only in prophylaxis, but in combating localized infections, such as boils. Vaccines had also been used largely in the treatment of toxaemic disease. Their employment in such a condition as pulmonary tuberculosis had waxed and waned; on the whole, the evidence of the value of tuberculin in this regard was very dubious, and he believed the same could be said of vaccine treatment in all toxaemic diseases. He personally thought that tuberculin had been tried, and had failed; this was borne out by the fact that there were, he believed, something like fifty-seven different varieties of tuberculin; but in prophylaxis the value of vaccines was unquestionable.

Mr. Harold Dodd asked for an opinion as to what help could be afforded by vaccine therapy in such an anxious and frequent case as that of a pricked finger with septicaemia following. He had found difficulty in knowing when to apply the different agents. He had seen mercurochrome give very good results in some cases of infection.

Dr. C. W. Buckley said he had used an anticatarrhal vaccine, prepared in St. Mary's Hospital laboratories; it had seemed to him in a given patient to yield at first a good result. The patient came back for another inoculation the second winter, which was perhaps less effective, but on the third occasion the inoculation seemed to set up a negative phase, and the vaccine appeared to be valueless. The same experience had recurred in the case of boils; some patients were specially susceptible to that kind of infection, and he had treated them by inoculation with good results. On the second outbreak the inoculation was less effective, and on the third, which might occur five or six years after the first, the vaccine appeared to have no value. He had found the same order of results follow the injection of manganese. He had been using vaccines for infective arthritis; the custom, when he started this treatment, was to give very large initial doses, 5,000,000 or more, and the results were variable, and not very convincing. But after watching these cases in hospital, he gradually got to the stage at which he started with quite a small dose of 500,000, and found the results much better.

Sir William Willcox maintained that the work which Sir Almroth Wright had done had opened up a new field in medicine. Largely in consequence of it, a number of diseases had come to be looked upon really as symptoms—as evidence of some toxic condition in the body. It was very largely due to Wright's work that the view of medicine in this country had changed so enormously during the past twenty years. There were certain conditions in which the body was sensitized, and in which vaccines should not be used. One of these was exophthalmic goitre, where serious results might follow from the giving of vaccines. Gout was another example. The utmost care should be taken with regard to the use of vaccines in asthma. He thought it might be accepted that vaccines had a profoundly beneficial value in prophylaxis; the statistics for typhoid fever, plague, and cholera proved that. One very important thing to remember before using vaccines in any case of illness was to discover any focus of infection in the body where organisms might be lying, which focus was not readily accessible to these bactericidal fluids. If there was such a focus present, the vaccines would do no good at all. He never attempted to use a vaccine in arthritis unless a most complete routine examination had been made for the presence of any focus of infection in the body. He required to be satisfied, not only by laboratory experiments, but by the experience of his colleagues in charge of nose and throat cases, or dental cases, or gynaecological cases, that there was no localized focus. After any focus of infection had been dealt with, vaccines did good. He began generally with a small dose (250,000) until he found whether the patient could tolerate bigger doses. It was very easy to overdose patients and make them worse.

Mr. E. B. Waggett asked whether in a case of chronic focal infection there was any value in using vaccines before operation. His own feeling was that it was better to get rid of the focal sepsis first. He had seen a serious case of dental sepsis, with certain mental effects, in which a minute dose of vaccine precipitated a great mental disturbance. That was before the extraction of the teeth; three or four weeks later the teeth were extracted without any ill effect.

Professor A. Fleming discussed the subject of vaccines against colds. A large group of people did not catch colds except once in a while; these were very well immunized as it was, and it seemed a pity to give them vaccines. The second group, not an inconsiderable one, consisted of people with chronic infections of the respiratory tract; sometimes what they called a cold was merely an exacerbation of the existing infection, and that type of patient might be inoculated. There was a third group in whom no chronic infection could be found, but who were still subject to colds; there again it was possible to increase their immunity so that colds occurred less frequently. Naturally, complete immunity was not forthcoming. There was considerable evidence indicating that the common cold was caused by a filter-passing organism, and that the organisms found in colds were secondary, so that vaccination was being conducted only against the secondary infection.

Dr. Walter Broadbent said that he never gave these vaccines against colds to patients before 5 o'clock in the afternoon, because he hoped that thus the negative phase would develop when the patient was in bed. Some disasters had occurred when the vaccines were given in the morning and the patients had gone out in the evening.

Mr. Zachary Cope commented on the use of vaccines from the point of view of the surgeon; an incision was one of the most valuable methods of getting rid of an infection. In very many parts of the body the products of bacterial infection accumulated, and very frequently, if they were let out, the greatest good resulted. He asked what vaccine should be given in a particular case. It was bound to be a method of trial and error when there were many micro-organisms at work. He did not think Sir Almroth Wright would countenance trial and error by the clinician who was not at work in the laboratory; but since there was a non-specific immunization as well as a specific immunization, it would be interesting to know whether they were justified in giving any vaccine for any disease, and to know also what amount was specific and what amount non-specific. Many practitioners used protein therapy to cure various conditions. The question of antiseptics which Sir Almroth Wright had raised was a very big one. Surgeons never injected carbolic acid into the blood, nor would dream of doing it, but there were many now who said that mercurochrome and other substances were really valuable in some of these diseases. If they were valuable, they ought to be used; he himself had not employed them because he was awaiting Sir Almroth Wright's opinion.

The President (Dr. R. A. Young) shared Dr. Geoffrey Marshall's fear of tuberculin in medical cases, yet he was impressed with the fact that tuberculin was used by surgical colleagues in the localized forms of tuberculosis. He had noted the failure of vaccines in certain respiratory infections, especially bronchial infections, and also in cases of lung abscess only incompletely drained.

Sir Almroth Wright said, in reply to the point made by Dr. Buckley about patients being well the first year and less well subsequently, that he could conceive of a man developing the power of dissolving microbes. The sensitiveness must obviously depend in part on whether the microbe was dissolved. He again laid stress on the necessity for laboratory experiment. Was there any laboratory experiment in favour of mercurochrome, the virtues of which had been mentioned by one or two speakers? He thought not. One speaker had said that the use of vaccines in prophylaxis was excellent, but in treatment was valueless. But there were all grades between a septicaemia and a small local infection; it would seem that if a vaccine was good for prophylaxis it must be good for small local infections also. A remark about Koch led Sir Almroth Wright to observe that "Koch was a very great man, but about the worst clinician—the worst doctor—it was possible to conceive."

TREATMENT OF APPENDICITIS.

At the opening meeting of the Section of Surgery of the Royal Academy of Medicine in Ireland, the president, Mr. R. Atkinson Stoney, read a paper on appendicitis and its treatment, based on a series of 209 cases operated on during the last 6½ years.

Mr. Stoney said that these cases were consecutive and unchosen, all the patients seen being operated on. The conditions were as follows: chronic or elapsing, 64 (30 per cent.); simple acute, 84 (40 per cent.); gangrenous, 17 (8 per cent.); abscess, 19 (9 per cent.); perforation or abscess with peritonitis, 7 (3 per cent.); very acute (frequently gangrenous) with peritonitis 18 (9 per cent.). In the last two categories, by peritonitis was meant generalized peritonitis. This did not imply necessarily pus present throughout the whole peritoneal cavity, fortunately a rare condition, but pus or turbid and usually foul-smelling fluid lying free in the peritoneal cavity without adhesions or localization. Four patients had died, two having very acute peritonitis and one a perforation or abscess with peritonitis. These three patients were extremely ill with high temperature, rapid pulse, and cyanosis; they were moribund at the time of operation, and died within a few hours. The fourth patient, with an abscess, did well for a few days, but died on the seventh day owing to broncho-pneumonia. By incision through the outer border of the rectus, the use of tube drainage and of modified bipp (iodoform 2, bismuth 1, and soft vaseline 13 parts), danger of spreading the infection is prevented in all cases where there is infection outside the appendix, these procedures being associated with careful packing off of the general peritoneal cavity as the first step after opening the peritoneum. Abdominal complications such as paralytic ileus, mechanical obstruction, pylephlebitis, subphrenic abscess, and haemorrhage were avoided. The only complications in this series comprised a case of pelvic abscess where a pelvic drain was not used, and another of persistent sinus where the appendix could not be removed. In only six other cases was the appendix left behind; these were all abscess cases. The occurrence of enlarged superficial veins in the right iliac fossa was noticed several times; they were always accompanied by the presence of pus, either forming or having formed in the neighbourhood of the appendix.

Sir William Wheeler thanked the president for having presented definite figures with regard to results. Authors had often claimed good results, but on close inquiry it was frequently found that the cases had not been accurately followed up. He emphasized the pitfalls surrounding acute appendicitis in young children. Subacute appendicitis had arisen in one of his cases recently in a young child with threadworms, and it should be recollected that threadworms predisposed to definite attacks of catarrhal appendicitis. Sir William Wheeler referred to a case of typical cyclical vomiting in a boy aged 10, in whom removal of the appendix brought about a cure. He pointed out that in acute cases complicating pregnancy there was a mortality of 77 per cent., according to J. B. Murphy. He had operated on several such cases, and found that the omentum and coils of small intestine were pushed away by the uterus, and there was little chance of suppuration becoming localized. The distended veins appeared to invite thrombophlebitis. For some time past he had been using the transverse incision for appendicectomy, but the incision was dictated by the individual case. He recommended a thorough understanding of what Murphy described as offensive and non-offensive pus; this, in his opinion, assisted in deciding the question of drainage or non-drainage.

Mr. Seton Pringle expressed himself as strongly in favour of immediate operation in almost all cases of acute appendicitis. He did not consider that the statistics put forward in favour of procrastination were conclusive. Some years ago he had analysed the results of 121 acute cases, operated on during a period of four years. Of these, ninety-four were drained, so that, in this number at least, there was infection not confined to the appendix. Of these patients, only four had died, and the average stay in hospital of the survivors was twenty-eight days. Mr. Pringle objected strongly to a "time-table" for appendicitis. It was not right, in his view, to talk of first, second, third, and fourth day appendicitis, since the pathological process varied so greatly. He classified his cases as early, middle, and late; he operated on all early cases and on all middle cases immediately, except in those rare instances in which the condition was obviously subsiding. As regards late cases, he advocated immediate operation in peritonitis, but frequently postponed operation for a few hours in cases of localized abscess. He believed all children should be operated on immediately the diagnosis was made.

Mr. J. L. Keegan thought that in difficult cases the most satisfactory incision was a vertical one on the outer side of the rectus; drainage could be reduced to a minimum by a careful toilet of the peritoneum. The president's results following the use of bipp were very satisfactory, but he personally felt that the use of iodoform in the abdomen was questionable.

Dr. T. G. Moorhead said he had been present at many operations in which chronic appendicitis had been diagnosed. Sometimes adhesions or other signs of inflammation were present, but not infrequently the appendix appeared normal, except that it was either longer or shorter than the average. Was an appendix abnormal merely because of unusual length or because it contained faecal matter? If any advance in diagnosis was to be made, it would be necessary to have a definite statement as to what was abnormal in the appendix. The symptoms should be carefully correlated with the condition found, and if this was done in a large series of cases, fewer operations would be performed merely for mild recurrent pain in the right iliac fossa.

Mr. W. Doolin declared that he would never introduce bipp into the abdominal cavity, since he was convinced of the defensive power of the peritoneum if left to itself. He thought the Ochsner treatment an extremely dangerous one to teach to students. He referred to the difficulty of operating in cases of pregnancy, especially during the last two months; the operative mortality in such cases was about 30 per cent., and the foetal mortality over 50 per cent. In cases of bad suppurative appendicitis he had recently been injecting a 10 per cent. solution of mercurochrome into the bowel; in none of these had it been necessary to perform a subsequent enterostomy.

Mr. C. J. MacAuley remarked that apart from paralytic ileus the mortality from acute appendicitis would be almost negligible. Some patients survived enterostomy and some did not, but so many got well spontaneously that it was hard to know whether to employ enterostomy or not. Secondary enterostomy was often undertaken too late. Mr. A. A. McConnell stated that in a series of 100 cases, most of which were emergencies, the mortality was 7 per cent.; this was considerably higher than that which the president had reported. In these 100 cases there had not been one in which infection of the abdominal wall had occurred, and he believed that such infection was extremely rare. He thought that some so-called residual abscesses were really pelvic abscesses which had been overlooked.

Mr. F. J. Henry referred to the importance of excluding the small intestine from the operative field, and said he always made a gridiron incision when operating on male patients. Appendicitis in the aged was a very insidious disease. He had recently seen two patients in whom a condition was found which rendered it difficult to say whether one was dealing with a leaking carcinoma or an appendix abscess. Both made uneventful recoveries, and, he had no doubt, were cases of "quiet" appendicitis. He thought that patients with chronic pain in the right iliac fossa should not be operated on without great reluctance, and only after a complete examination. Chronic appendicitis *per se* was an extremely rare disease; when an operation for it was undertaken, a complete laparotomy should be performed.

The President, in reply, agreed that the difficulty of diagnosis in children was very great; the danger of operation was also great, chiefly owing to the fact that children had little omentum. In his series he had not had one case of paralytic ileus. He did not like injecting fluid into the abdomen unless it came out, and therefore never used a syringe till a week after an operation.

Reviews.

SURGICAL DIAGNOSIS.

In his introduction to the three volumes on *Surgical Diagnosis*[1] by American authors, of which he is the editor, Dr. Evarts Graham strikes a note of truth when he says, "The remarkable developments in the art of operative surgery have not been an unalloyed blessing to humanity, for, because of the very fact that much of the danger and fear has been removed from surgical operations, the new spectre of unnecessary and unwise operations has appeared." This, combined with the general decentralization of surgery, has resulted in the unfortunate fact that often patients are operated upon with too little preliminary study. Dr. Graham adopts these arguments as a justification for the appearance of a set of new and comprehensive volumes dealing with a subject that has already, in this country at least, been rather adequately covered. Nevertheless, we feel that these particular books are welcome, although their appeal lies much more in their general excellence and thoroughness of presentation than in the nature of their subject matter.

The list of contributors is an imposing one, containing as it does the names of the leading American surgeons in each branch of the subject; the opinions expressed can therefore be accepted without hesitation as authoritative. In the general scheme a very large amount of attention has been paid to pathology, and, indeed, surgical applied pathology more nearly describes the scope of the work than its actual title. This is all to the good, for, if skilfully handled, pathology should be capable of explaining the symptomatology, and so lead to the diagnosis. As a whole, the books are very informative, "up to the minute," and well written, and the balance between the sections is properly preserved.

Of the individual sections, that on diseases of the liver and gall-bladder has, very appropriately, been written by Dr. Graham himself, and, despite the fact that his great reputation upon this subject might have led to an excusable overweighting, it is particularly noticeable that here, as elsewhere, a due concentration, albeit combined with thoroughness, has been maintained; this section, indeed, forms one of the best summaries of the present state of our knowledge of liver function and its tests, and of gall-bladder pathology, that we have yet seen. The section upon infections of the hand is by Kanavel, than whom no better exponent of the subject could be found. Lesions of the spinal column are in the capable hands of Hibbs. Adson of the Mayo Clinic writes on diseases of the spinal cord, a section that is, if such a thing be possible, even better illustrated than the rest of the book. The chapter on the skull, and the brain and its membranes is by Dandy; here again no undue prominence is given to the problems of hydrocephalus, which the author's well-known work upon the subject might have led us to anticipate. One very stimulating chapter is devoted to a discussion of the uses of surgery in conditions involving the sympathetic nervous system, and, strangely enough, another small one to osteopsathyrosis.

It is impossible, however, in a short review, to take each section separately; they are of a uniform excellence, and there is little to criticize in any of them. A bibliography at the end of each chapter is sufficiently extensive to guide those who wish to refer to particular articles, while in addition to the usual index at the end of each volume there is a separate small index volume, which should save much annoyance when references have to be searched for. The publishers have also very wisely placed a small contents table on the covers, a plan which might well be adopted in all multi-volume works. We are used to copious illustrations in books of American origin, and these volumes are no exception; photographs and radiograms, as well as the simple line drawings, have reproduced well, and despite their profusion there are few, if any, redundant or meaningless illustrations. The paper is good, and the type pleasant, while the binding has the strength necessary in a book of reference. Altogether this work can be very heartily recommended, since it presents the state of modern surgical knowledge in a very fair an unbiased manner; it will especially appeal to those who believe that surgery is a science as well as an art.

[1] *Surgical Diagnosis.* By American Authors. Edited by Evarts Ambrose Graham, M.D. Vols. i, ii, iii, and General Index. Philadelphia and London: W. B. Saunders Company. 1930. (6 × 9¾, vol. i, pp. ix + 919, 508 figures; vol. ii, pp. vii + 871, 834 figures; vol. iii, pp. vii + 1044, 446 figures; Index, pp. 155. Set of three volumes and index, £7 10s.)

HAEMATOLOGY.

Most haematologists are familiar with Arneth's counts and pictures, and it is generally accepted that a "shift" to the right or left is fairly constant in different diseased states, though it cannot be regarded as specific for any one; the type of picture may supply an interesting and useful confirmatory sign, but cannot itself be regarded in any way as of special value in diagnosis. The present book is the second volume of Dr. Arneth's *Die speziellen Blutkrankheiten*[2]; the first volume has not been received. Here the author has extended his principle of qualitative analysis and classification of white corpuscles to lymphocytes, and has considered the reactions of this widely varying class of cells to different forms of leukaemia. With this, as with Arneth's previous work, it is impossible to avoid the conclusion that an arbitrary classification of cells much influenced by the personal bias of the observer must be open to serious criticism; its appearance of mathematical accuracy has no significance and may be misleading. Certainly it is a procedure that could not be usefully employed in general routine blood examination. With the best of intentions, the author has used an extensive system of abbreviations, of which the glossary is unfortunately incomplete, so that interpretation of the text and tables is often impossible. Abbreviation and elision could have been directed with advantage to the clinical histories and discussions, which are generally prolix and frequently irrelevant.

In an interesting monograph on *The Volume of the Blood and Plasma*,[3] Drs. L. G. Rowntree and G. E. Brown attempt to show the value of the study of the blood volume in clinical medicine, and present the results obtained by the "dye method" which they have used for over six years on more than 1,000 examinations. They claim that "by this method it is possible without injury or harm to the patient to determine the nature and extent of the changes in the volume of the plasma and blood in various diseases, and to ascertain the role that these changes play in the symptoms and signs of various diseases and in their course and outcome." The first part of the book is concerned with the technique of the method, and discusses impartially the nature and value and sources of errors, and the various objections which have been raised by other workers in the same field of inquiry. The authors aim at a constant routine method. They use Congo red for the dye; examinations are made in the morning following sleep, the patient supine and fasting; they make an interval of three to six minutes between injection of the dye and collection of the blood; using the same centrifuge, and spinning the same quantity of blood for thirty minutes at 3,000 revolutions a minute, they found in one series of 133 quadruplicate estimations a mean variation from the average value was only 1.5 per cent. of the total blood in the haematocrit tube. They find the method absolutely safe, and after discussing the results obtained by other methods, especially the CO method, they believe that "the dye method is the method of choice and it alone should be used." Protocols are given of estimations of blood and plasma volumes in forty-nine normal men and twenty-five normal women; the subjects are grouped as underweight, standard, and overweight, variations from the standard by more than 10 per cent. not being regarded as abnormal. The mean blood volume per kilo of body weight for all the subjects was 88.6 c.cm.; in standard men the mean amount of blood

[2] *Die speziellen Blutkrankheiten.* Band ii. Von. Dr. Joseph Arneth. Münster i. Westf.: H. Stenderhoff. 1930. (Sup. roy. 8vo, pp. xv + 422; 2 figures. R.M.30.)

[3] *The Volume of the Blood and Plasma.* By Leonard G. Rowntree, M.D., and George E. Brown, M.D. With the technical assistance of Grace M. Roth. Mayo Clinic Monographs. Philadelphia and London: W. B. Saunders Company. 1929. (Post 8vo, pp. 219; 47 tables. 14s. net.)

per square metre of body surface was 3,410 c.cm. Men have 19 per cent. more blood than women, but only 13 per cent. more plasma—that is, the cell volume is 6 per cent. larger in men than in women. Estimations in children are also discussed; generally it is found that infants seem to have blood volumes too large for their weight but too small for their body surface. The greater portion of the book deals with the application of the dye method to estimation of the blood volume and plasma volume in disease. The results are interesting in themselves, and help to explain the pathological conditions and symptoms observed. As might be expected, wide variations of value are obtained even by the authors employing their own established method, and it is evident that much more work will be needed before sufficiently constant estimations can be made to warrant the universal adoption of the method as a routine clinical procedure.

APHASIA IN CHILDREN.

AN interesting inquiry into the problems of aphasia is recorded by Dr. A. W. G. EWING in a monograph entitled *Aphasia in Children*.[4] Such limitation of the field of investigation has very definite advantages, for, as Dr. E. D. ADRIAN points out in an introduction, there are significant differences between the aphasia of adults and children, the former being due usually to a breakdown of the machinery set up in infancy for "symbolic thinking and expression," the latter to a failure to set up this machinery. In one group of congenitally aphasic children Dr. Ewing was able to show, by a series of ingenious tests, that though otherwise normal in their hearing, these children were unable to hear some of the higher frequencies, or to distinguish, except when specially trained to do so, one speech sound from another. Other patients classed as deaf and dumb were found by these tests to have normal hearing; and with some patients having aphasia not accompanied by deafness, the data elicited by the tests indicated incomplete or arrested development of the central mechanism in the brain, but, apart from the use of words, normal intelligence. Dr. Ewing's description of the methods by which he tested these children deserves the close attention of otologists. The rest of the work, in which, together with his own conclusions, he presents a critical survey of the literature on aphasia—a remarkable achievement on the part of a non-medical man—contains material of fundamental importance to neurologists and those interested in the training of children.

MECHANICS OF THE CARDIOVASCULAR SYSTEM.

IT is difficult to understand why Dr. Hauffe, in his book on The Heart, Pulsation and Movement of the Blood,[5] should be so discursive, for his theme is simple and can be expressed in very few words. His conception of cardiac rhythmicity has the merit of originality, but it is possible that the present-day retreat from materialistic views on biological phenomena may suffice to hurry his theory into obscurity. He thinks that we have no grounds for postulating an independent property of rhythmicity in the heart muscle; the walls of the primitive vascular tubes are elastic, and can be set in rhythmic pulsatile movement, given certain conditions of convection currents in the yolk-sac; the pulsatile movement originated in this purely mechanical way is continued in that part of the early vascular system which develops into the heart, the stimuli to contraction and relaxation being furnished by the vascular pulsations. This is the original contribution he makes to the mechanics of the vascular system. The rest of his book describes pulsation under purely mechanical conditions and in various parts of the circulatory system. The author is most interesting in his treatment of wave motion in liquids, and the majority of his readers will be surprised to learn that the waves on the sea depend for their propagation on the changes of air pressure above them; he is less impressive in his treatment of the vascular system on these lines, asserting pulsation to be conditioned by certain relations of the rate of flow through elastic tubes to their diameter. The most readily accessible criticism of this theory is supplied by its improbability. To obtain the initial rate of flow from the yolk-sac to the embryo necessary to induce pulsation in the vascular spaces, implies such a fortuitous combination of circumstances that one would be justified in congratulating a hen which hatched one chicken in her lifetime. Again, if the pulsation is at any moment temporarily arrested, as by experimental vagal stimulation, how can it reappear?

In the past too much attention has been focused on the central part of the vascular system to the neglect of peripheral mechanisms, which might be in operation, but Dr. Hauffe has gone to the other extreme and ascribed to the heart an inconspicuous though worthy function. It would seem difficult to understand how a mechanical system of this kind could be sufficiently adaptable to the fundamental changes in working conditions which obtain when the human body has suddenly to work in the horizontal instead of the normal erect posture, for it is utterly opposed to the conception we are accustomed to hold of the heart, as a pump, forcing forward more or less efficiently what blood it receives from the periphery through a variety of agents, not least of which is muscular movement, and suiting itself, by the force and the rate of its contractions, to the constantly varying conditions prevailing.

RADIOLOGICAL TECHNIQUE.

X-Ray Technology,[6] by H. M. TERRILL and C. T. ULREY, is a treatise on the production, measurement, and application of *x* rays. In parts this work is highly technical, but even to the reader who is not a physicist it offers a considerable amount of useful information on *x*-ray apparatus and its uses; and to those practising deep *x*-ray therapy who desire to attain scientific accuracy in the measurement of the quality and quantity of the *x*-ray stream it should prove invaluable.

The eleven chapters deal in order with the properties of moving electrons, *x*-ray tubes, and their practical application, high voltage generation, the measurement of voltage, current, ionization, total energy and wave length, biological measurement, radiography, and *x*-ray analysis. In a preface the authors state that their aim has been to present not so much the theoretical as the practical aspects of *x*-ray measurement as encountered by all workers in the *x*-ray laboratory. This end they have attained with considerable success; on practically every page the *x*-ray worker will find useful information on everyday problems, and any difficulties in the text are mitigated for him by the large number of explanatory diagrams. A considerable amount of space is allotted to instrumentation, and the descriptions of various pieces of apparatus are good, especially those in the chapter on *x*-ray tubes.

NOTES ON BOOKS.

Possession, Demoniacal and Other, among Primitive Races, in Antiquity, the Middle Ages, and Modern Times[7] is a translation of Professor OESTERREICH'S work, published in 1921, which is a veritable store of information on this interesting subject from the dawn of history until the present time. The first of the two parts of the volume deals with the nature of the state of possession, and the second, and much the longer, with its geographical distribution throughout the world and the ages, and its importance from the standpoint of religious psychology. The history of religion provides many examples of possession, but these fade away before the advance of a high standard of civilization. The subjective state of those regarded as possessed may be one of somnambulism, or, on the other hand, may be "lucid"—namely, with consciousness of their condition. With the passing of belief in the devil possession by the souls of the dead who are "not at peace" has

[4] *Aphasia in Children*. By Alex. W. G. Ewing, M.A., Ph.D. With an introduction by E. D. Adrian, M.D., F.R.C.P., F.R.S. Oxford Medical Publications. London: Milford, Oxford University Press. 1930. (Demy 8vo, pp. xi + 152. 10s. 6d. net.)

[5] *Herz, Pulsation und Blutbewegung*. Von Dr. Georg Hauffe. Mit einem Geleitwort von Geheimrat Friedr. Kraus. München: J. F. Lehmann. 1930. (6¼ × 9, pp. 246; 9 figures. M.14.)

[6] *X-Ray Technology: The Production, Measurement, and Applications of X-Rays*. By H. M. Terrill, Ph.D., and C. T. Ulrey, Ph.D. London: Chapman and Hall. 1930. (6¼ × 9½, pp. xii + 256; 143 figures. 21s. net.)

[7] *Possession, Demoniacal and Other, among Primitive Races, in Antiquity, the Middle Ages, and Modern Times*. By T. K. Oesterreich, Professor in the University of Tübingen; authorized translation by D. Ibberson, M.A. London: Kegan Paul, Trench, Trubner and Co., Ltd. 1930. (Med. 8vo, pp. xi + 400. 21s. net.)

become more usual. The chapter on the genesis and extinction of possession shows what an important part is played by belief in the devil combined with auto- and hetero-suggestion, and that this is why there are hardly any examples of possession among the highly educated. The second part enters in great detail into the occurrence of spontaneous and of artificial possession among the different races of mankind in past and present times. Among primitive peoples possession has always been a prominent feature, but it declines where Christian missions have gained such considerable influence as to free the natives from the fear of demons and their attacks on the souls of the living. The section, fully annotated as elsewhere, on voluntary possession among the higher civilizations, covers the ground from Graeco-Roman times onwards, and ends with an account of Mrs. Piper, the famous American medium, who, simultaneously with a state of possession, presented parapsychic phenomena and appeared to be able not only to penetrate the actual state of consciousness of others, but to reveal their past. A séance which Sir Oliver Lodge held with Mrs. Piper on Christmas day, 1889, is reproduced in full from the *Proceedings* of the Society for Psychical Research. This valuable collection of data and source of reference closes with a short appendix on parapsychology.

The Road to Buenos Ayres,[8] by M. Albert Londres, a well-known Paris journalist and the author of remarkable revelations on French convict settlements and penal battalions in North Africa, contains an account of the white slave traffic which no one interested in social hygiene and the history of prostitution should fail to read. The book is well translated, and contains an introduction by Thomas Dreiser, who pays it the high compliment of comparing it with *Candide*, *Tartuffe*, and the *Tale of a Tub*, in "its critical, sardonic revealing and side-splitting commentary on life and its meaning."

[8] *The Road to Buenos Ayres*. By Albert Londres. With an introduction by Theodore Dreiser. Translated by Eric Sutton. London: Constable and Co., Ltd. 1930. (Cr. 8vo, pp. xx + 175. 3s. 6d. net.)

PREPARATIONS AND APPLIANCES.

A NEW BED DESK.

Sir Arnold Lawson, F.R.C.S., writes:

It is common knowledge that the usual methods adopted by those who wish to read and write in bed are scientifically bad and often injurious to the eyes. Further, it is generally appreciated that the discomfort engendered after a time, even when well propped up by pillows, makes both reading and writing, and especially the latter, only possible for a very limited period. So far as I am aware nobody has hitherto found a means of dealing effectively with the trouble. In both reading and writing the chief difficulty lies in securing a steady support for the book or writing-pad at a convenient angle, which must be varied according to the position of the head and shoulders when propped up on cushions or pillows. In addition, so far as writing is concerned, a support is required for the right arm and hand, for writing without such support is very difficult and soon becomes extremely fatiguing.

With the help of Messrs. Theodore Hamblin, Ltd., of 15, Wigmore Street, I have designed a bed reading and writing desk, which does away with faulty and uncomfortable attitudes, and makes reading and writing in bed as easy as when sitting in an armchair or at a table.

I hope that this desk will prove to be a very great comfort not only to invalids and to those who are of necessity confined for a period to bed, but also to that very large section of the community which habitually "reads itself to sleep."

The main feature of the design (which is simple enough) is a stout light board of suitable height and breadth, which is shaped elliptically below in order to fit into the body, the right side of the ellipse being lengthened to form a slightly curved tail, which runs away behind the body and rests with its lower edge on the bed. The board thus fits the body as the patient reclines propped up by pillows, the tail of the board forming a support for the right arm of the patient. This is shown quite clearly in the illustrations (Figs. 1 and 2), which are from drawings of the desk in actual use. The necessary support for the board is furnished in an equally simple fashion in two ways. On the right side there is a double sliding arrangement, which is clamped by a screw easy to reach and to manipulate. This slide regulates the angle at which the board is supported, and at the same time affords a horizontal bearing along the bed, no matter at what angle the board may be clamped, keeping the board absolutely secure and fixed. On the opposite side of the board there is a non-sliding support, also clamped by a screw. This support projects from the board at an angle easily regulated by the patient, so that its lower end rests comfortably on the left side of the bed. The object of this second support is to counteract the tendency of the board to be pushed over to the left by the pressure of the right arm when writing and to give extra stability to the board when it is supporting a book.

Fig. 1.

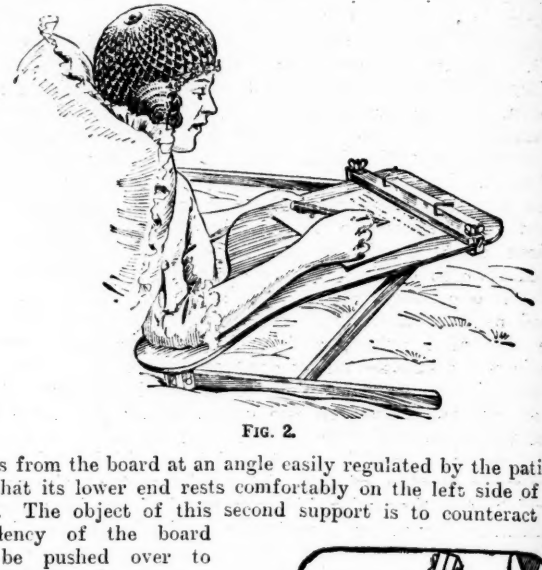


Fig. 2.

An important feature is the portability of the bed desk. The fact that it can be folded up flat and put away after use is a great convenience in a sick-room where space is valuable, and the whole thing can be erected and folded up again by the patient with little effort. Figure 3 shows the back of the desk when folded up.

The bed desk has been very well made by Messrs. Hamblin, who have patented it, and have registered for it the name of "The Kangaroo" Bed Desk, because it "supports itself by its tail.

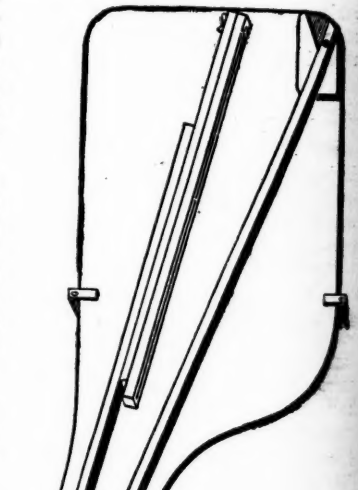


Fig. 3.

*** We have tried this simple and ingenious appliance, in bed and on a couch, and in our opinion it fulfils the claims made by the inventor. Both for reading and for writing Sir Arnold Lawson's bed desk should prove a boon to invalids. The price, we understand, is 18s. 6d.—Ed., *B.M.J.*

WOODSIDE NERVE HOSPITAL.

THE NEW ST. LUKE'S.

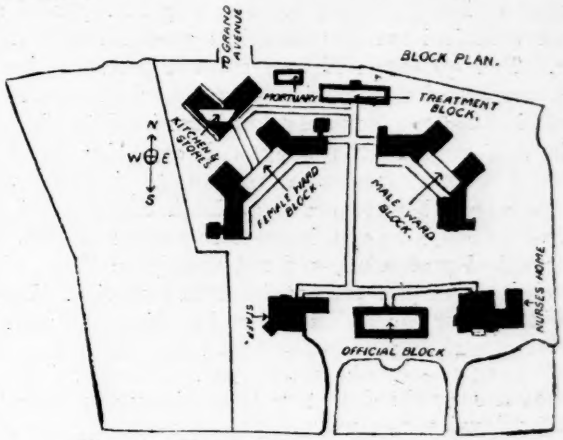
Some of the old foundations, established for the care and shelter of the mentally disordered, are showing in these days a ready adaptability to the modern spirit in psychiatric medicine. Only a few months ago we described the removal of Bethlem Hospital into rural Kent, where its new buildings incorporate the most humane and progressive ideas; and now it is the turn of St. Luke's, which was founded in the middle of the eighteenth century to take in some of the poor wretches for whom Bethlem, then standing on the other side of Moorfields, could not find accommodation. Later on St. Luke's removed into Old Street, a site which it had to relinquish in 1916, and since then its work has been in effect suspended until certain new developments should be complete, one in Buckinghamshire and another in Highgate, whereby this charity, still maintaining its traditions and ideals, could re-interpret them in the light of modern ideas of care and treatment. One of these developments is the planning on the northern heights of London of a nursing home and clinic for functional nervous and kindred disorders. During the past two years there has been quietly building on Muswell Hill, overlooking Highgate Wood, and not more than half an hour from the city, a private hospital where it is intended to apply the most rational and scientific treatment, in the hands of a specially trained medical and nursing staff. The Woodside Nerve Hospital has been completed without any blare of trumpets or public appeal. The committee of governors of St. Luke's, headed by Lord Blanesburgh have proceeded on the unusual lines of "no publicity until there is something to show."

Development of the Scheme.

It will be recalled that it was under the auspices of St. Luke's seven years ago that two small wards for the treatment of functional disorders of the nervous system were established in the Neurological Department of the Middlesex Hospital. The patients in these wards have been treated by the medical staff of St. Luke's and attended by St. Luke's nurses. This departure was viewed at first doubtfully in some quarters, and many looked askance at any association of cases which might be mental or borderline with a general hospital. But although the experiment has been amply justified, the inadequacy, or, indeed, the absence, of facilities for treatment has, however, remained, and there must be very many cases, beginning as perfectly curable nervous disorder, which, in the absence of appropriate treatment, have gone on gradually to a hopeless condition. The new hospital, accommodating 50 patients, is to be devoted exclusively to treatment of these disorders, as far as possible in their early stages, and it is felt that patients of the educated class will especially appreciate the value of the rest and recreation here procurable. It is not intended to admit cases of insanity or mental deficiency, or cases of a kind likely to cause annoyance to other patients.

Structure of the New Hospital.

Our representative was taken round the new hospital by Dr. R. Withers Gilmour, physician in charge, and lecturer in psychiatry at Middlesex Hospital, whose influence is shown in the many original details of design and arrangement. Privacy, a pleasant situation, and spacious grounds have been provided; and although London building is creeping up these northern hills, hardly anywhere is the institution overlooked by neighbouring houses. The institution consists, in the first place, of an administrative block, a charming piece of modern architecture, having on one side an older house which is to serve as a nurses' home, and on the other a house which will furnish quarters for the matron, for the deputy physician in charge, and for the domestic staff. The administrative block consists of several offices, a handsome committee room, and also the nucleus of an out-patient department. Beyond are the male and female ward blocks, arranged so as to form almost a semicircle facing south, and beyond these again is the treatment block, a two-floor building, and another block serving as kitchen and stores. The chief architectural feature which catches the eye in the general view is the long covered ways connecting the buildings. These with their red tiles are very cheerful cloisters indeed. Each ward block consists of two floors, and each floor, on the women's side, comprises two four-bed wards and seven single-bed wards, and on the men's side, two three-bed wards and four single-bed wards. Thus thirty women patients and twenty men can be accommodated. On each floor there is a private and a general sitting room, a dining room, and other apartments, including examination and isolation rooms. Every ward, upstairs and down, opens directly on to covered verandahs, wide enough to leave ample space for walking even when the beds have all been wheeled out into the sunshine. Hot and cold water is laid on to every room, the provision of baths is abundant, and many little devices with regard to furnishing, lighting, and fitment have been thought out in a way to add to the patients' comfort and to the convenient running of the institution.



Woodside Nerve Hospital, Muswell Hill.

The treatment block contains provision for hydrotherapy, massage, light treatment, and electrotherapy, includ g diathermy. All the appliances are of the latest type. In this block also is a dispensary, a room for dental surgery, an *x*-ray room, with dark room attached, and a room which could be used for "occupation therapy." Here also are three laboratories, well lighted and with good bench accommodation, where routine pathological testing is done, and where a certain amount of original research may be carried out. The kitchen block, again, is spacious and adequate, and underneath are the boilers which operate the low pressure hot-water heating system and the domestic supply to all the buildings.

Financial Provisions.

St. Luke's Foundation has borne the capital expenditure of building and equipment, but the current expenses of running the institution must be met by the patients themselves according to their means. The average charge cannot yet be precisely estimated. A weekly minimum of 5½ guineas is tentatively mentioned (apart from special charges for private rooms) to be paid by those whose circumstances appear to warrant it; but at the same time every effort will be made, by means of reductions granted at the discretion of the committee of governors, to make the hospital available to the less fortunate, and any information or expression of opinion on this point by the patient's doctor will strengthen the application and avoid delay. Practitioners will be welcomed if they desire to visit their patients at the hospital and carry on their treatment there in consultation with the physician in charge, the fees for such attendance being a matter of private arrangement between the doctor and the patient. In addition to the physician in charge (Dr. Gilmour) and the deputy physician (Dr. Lawrie), there are a dental surgeon and a radiologist, and the institution has a distinguished honorary consulting and visiting staff.

The hospital is to have the honour of a royal opening, by H.H. Princess Helena Victoria, on November 8th.

British Medical Journal.

SATURDAY, NOVEMBER 1st, 1930.

THE PANEL CONFERENCE.

The annual conference of Local Medical and Panel Committees was held last week in the Great Hall of the British Medical Association, and a full account of the proceedings will be found in the *Supplement* to our present issue. These proceedings were shorter than usual, and the agenda comprised a much smaller number of items relating to what may be regarded as minor technical matters than has generally been the case. Two questions of very great importance, however, came under discussion—namely, the method by which insured persons are to be permitted to change their doctor, and the suggested extension of the national health insurance system to include the dependants of insured persons. Both these questions are, of course, of great interest to most members of the medical profession, and not merely to those who are engaged in the present insurance service. They should therefore be understood and considered by all.

In the earlier years of national health insurance, apart from the death, retirement, or removal of a practitioner, or the departure of the insured person to another district, the insured person could change his doctor only at fixed dates, and then only by giving a month's notice. If change at any other time were desired, the consent of the practitioner on whose list the patient's name appeared had to be obtained. Later, on strong representations from the Insurance Acts Committee on behalf of the profession, these restrictions were abolished, and free choice of doctor at any time was allowed by the simple process of presenting the insured person's "medical card" to another practitioner for acceptance. Some three years ago, again, this method was modified by the interposition of a fortnight's delay. The insured person has now to give that short notice to the Insurance Committee of his intention to make a change. The notice may be given at any time, and the change may be made without notice if the consent of the attending practitioner be obtained. It is not clear that this modification has effected any marked alteration in the number of changes of doctor made by insured persons, or that it has had any other practical advantage. The Minister of Health is now suggesting, at the behest of the Consultative Council of Approved Societies, and of certain administrative departments, that there should be a return to the earliest method, the fixed dates being the first day of each quarter, and the notice required being one month.

The ostensible reasons leading up to this suggestion are that the approved societies have been naturally anxious about the greatly increased claims for cash sickness benefit which have been made over the last four or five years; that they have formed the opinion (erroneously, we believe) that a material element in bringing about this increase has been a certain slackness of certification on the part of doctors who feared lest by refusing certificates of incapacity they might lose their patients, and the families of such patients, to other practitioners who would view the position less strictly; and that a considerable restriction of the patient's right to make a change would remedy this state of affairs. The Insurance Acts Committee and the Panel Conference, while wishing to give full consideration and weight to the Minister's suggestion, are quite unable to accept either the premisses or the conclusion of this argument. They reply that it is of great importance, in the interest of insured persons, that the relation between doctor and patient in insurance practice should be differentiated as little as possible from that which obtains in private practice; that a return to something like the old conditions would tend to create a vested interest in patients and to make less easy the establishment of younger practitioners in practice; and that it would fail of its object in that practitioners led into any slackness of certification by the alleged motive form but an insignificant element in connexion with claims for sickness benefit, and that in so far as they are a factor at all their conduct would not be likely to change because the consummation of their fears would be made slightly less imminent. In this discussion logic appears to be entirely on the one side. It is stated, moreover, that there are definite signs, at least in some areas, that the prevalence of incapacitating illness leading to sickness benefit claims is now less than it has been for some years. This would seem to indicate the desirability for a pause before the panic imposition of a more than doubtful and possibly dangerous remedy.

With regard to the other question—the inclusion of the dependants of insured persons in a national health insurance scheme—it is important that this should be viewed in its right perspective and proportions. What the Conference and other bodies of the profession have stated is not that "the time is now ripe for the inclusion of the dependants of insured persons," but that the time is ripe for the medical profession to ask for such inclusion. The appropriate time for such extention of medical benefit must naturally be conditioned by the exigencies of politics and of finance, and therefore does not at present seem likely to be immediate. This cannot be for the medical profession to determine; but what is at once opportune and significant is that the profession should now draw attention to the need for the fuller provision of medical advice and treatment for these persons, and should urge that this provision ought to be made through the machinery of a compulsory contributory insurance scheme, and not by any other and less satisfactory method, and that it should take its appropriate place as part of a carefully considered plan for giving a complete medical service on a national scale to those members of the community who are not in a position to provide independently what is needed. Suggestions for a general medical service for the nation on these lines have recently been made by the British Medical Association, and, with few exceptions, have been received very favourably by those who are interested in this matter. It is important to note that all the really representative bodies of the organized medical profession have now emphatically endorsed the opinion that the need is real, that the principles on which action should proceed are clear, and that, by whatever steps and in whatever order such action is taken, the final plan of full provision should be always in mind, so that nothing of a tentative or temporary nature should be done in such a way as to militate against or make more difficult the proper ultimate development.

"TONSILS AND ADENOIDS."

AN elaborate survey of two large groups of children has been made by Dr. Albert Kaiser, and the results were published a few weeks ago in the *Journal of the American Medical Association*.[1] The children in one group had been submitted to tonsillectomy, and in the other the operation had been recommended but not performed. The second group therefore affords a fairly reliable control for comparing the late effects, and the numbers are large enough to give accurate percentages and eliminate the errors due to chance in a small series of cases. Each group contained 2,200 children. The paper is interesting not merely on account of the statistical results obtained, which reveal nothing very startling, but more because it shows a realization that when no less than 50 per cent. of the children in some communities have been submitted to this operation, it is time to pause and take stock of the position. The point which the craze for this operation has reached is shown by the number of perfectly healthy persons who present themselves at hospital because they are unable to obtain employment with their tonsils *in situ*. It appears from the remarks of Dr. Kaiser, in closing the discussion which followed his paper, that this manifestation of officious zeal is common also in the United States. It would not be disputed by any unprejudiced judge that in individual cases, well selected, there is no minor operation which confers more benefit by improving the general health and by relieving the child from such recurrent infections such as tonsillitis, cervical adenitis, and otitis media. Such an admission, however, implies that these operations are performed only when really necessary, and are based on reasonable indications.

If statistics have any value at all, the figures of Dr. Kaiser show that, over a period of ten years, some of the benefits of the operation become less evident after the lapse of a few years from the date of its performance. They show, however, that during these ten years the children who have had their tonsils removed are less liable to sore throats, to scarlet fever, to diphtheria, to cervical adenitis, and to first attacks of rheumatism. Acute coryza and otitis media are lessened in incidence for the first three years after the operation, but over a period of ten years are not much influenced, and recurrent attacks of rheumatism are not improved. These results show that in a large group of well-selected cases the benefits which are familiar in individual cases maintain a fair average, and although the indications are not definitely stated it may be assumed that they are fairly well known. There is, however, a group of cases in which the operation in children does not yield the satisfactory result expected, and there is another point which the investigations of Dr. Kaiser touch upon but leave unsettled. They do not show how much of the good resulting from the operation is due to removal of adenoids and how much to removal of tonsils, though they do show that incomplete tonsillectomies do not offer the same protection as complete removal. It is a frequent observation that when tonsils and adenoids are removed in small children under 5 years of age there is a tendency for the adenoids to recur during the next few years, and a secondary removal may be required. In these children the symptoms of nasal obstruction, the recurrent colds, and otitis media are chiefly due to adenoids, and whatever the function of this lymphoid tissue may be at this period of life, there can be no doubt that the child has need of it. In consequence, if there is a complete tonsillectomy as well as removal of adenoids, the lack of this tissue leads to a recurrence of adenoids, whereas if harmless tonsils are left they protect the child against this deficiency and against the regrowth of adenoids.

The conclusion seems to be that the pendulum is swinging towards a stricter selection of cases on the lines indicated by Dr. Kaiser, and that in small children removal of adenoids alone is usually sufficient. In a good proportion of such children the tonsils will not require to be removed at all, but when it is necessary a better result is obtained by postponing tonsillectomy until the child is bigger. The evil resulting from incomplete tonsillectomies performed in young children has been conspicuous in recent years, and difficult secondary dissections are frequent. Such patients would have been better served by a simple removal of adenoids in the first instance, and saved from some slight hazard.

[1] *Journ. Amer. Med. Assoc.*, September 20th, 1930. Results of Tonsillectomy: A Comparative Study of Twenty-two Hundred Tonsillectomized Children with an Equal Number of Controls Three and Ten Years after Operation. By Albert D. Kaiser, M.D.

THE SLEEP HABIT IN INFANCY.

DR. H. C. CAMERON'S admirable paper on the disorders of sleep in childhood, delivered at the Winnipeg Annual Meeting, is printed in our opening pages this week. Nowadays, the value of training in the development of the placid infant is fully appreciated, but often a conscientious mother fails in the management of her child, while a more casual or stupid woman will get better results. The reason is, of course, that the more intelligent type of woman, who has attempted to qualify herself for motherhood by assimilating modern theories of child management, is apt to be over-anxious in her efforts to apply them; as Dr. Cameron points out, her agitation, transmitted to the child, may react unfavourably upon it, and a vicious circle is rapidly established, which may persist indefinitely. His suggestion that the best place for the infant is in contact with the mother's back, so that her face and eyes are directed away from the child, and her hands can be occupied with other activities, has unfortunately a limited application. The hours during which a badly trained infant may indulge in crying and insomnia are often in the early evening, when the mother has turned her attention to other aspects of her life. To retire to the nursery to sit in close proximity to the child is to teach him never to sleep unless his mother is present. It would seem that a better plan lies in training the mother. It is surprising how few are the women who can treat their first child with tranquillity; yet the mother is presumably an intelligent and reasonable person, and can be trained much more rapidly than a previously mismanaged infant. Schools of motherhood are sometimes advocated, and if they ever come into existence their motto should be "Æquanimitas." Dr. Cameron comments on the absence of restlessness among infants in institutions; here they receive all the care necessary, without the constant stimulation of maternal anxiety. He insists that it is through the mother and the nurse that influence can be brought to bear on the restless child; the responsibility, of course, must lie primarily with the maternity nurse. It is not enough that she should inspire confidence in her own work; she must be capable of transmitting self-confidence to the mother, or her very efficiency will make her departure at the end of the puerperium a more serious break. Few mothers appreciate the essential robustness of a baby; the mere process of being born—of being thrust forcibly through a narrow bony channel—is one to which few would care to subject a small infant. Yet Nature does not

hesitate to enforce it, and the child, far from being injured, in the majority of cases is not even ill. If a mother can be made to realize that a normal infant is surprisingly difficult to kill, she will enter on the experiment of rearing one with fewer misgivings. The need of drugs for the well-managed infant is rare, but where a habit of restlessness has been formed Dr. Cameron advises the use of chloral until the sleep rhythm has been restored. He reminds us, however, that persistent crying may have a foundation in physical discomfort. It is not at all easy for the inexperienced mother to distinguish between colic and choler in her child. Here again the nurse is the important tutor; she must teach her patient to look for signs of illness in the infant, other than crying; to observe the stools, to be on the watch for aerophagy, and to notice catarrhal obstruction of the nose, which may interfere with suction while taking the breast. The few cases in which unrest is the result of persistent pain from such conditions as otitis media, syphilitic periostitis, and the subperiosteal haemorrhages of scurvy, call for the early intervention of the doctor; but if the mother has trained herself to habitual calmness she is more likely to detect a serious condition early, and less liable to set up the cry of "wolf" when the child is in no danger.

A "SCHOOL OF HEALTH."

In speaking to a vote of thanks to Professor A. W. Sheen for his address from the chair of the Hunterian Society last week, Dr. W. Langdon Brown conjectured that somewhere about 2030 A.D. a diligent student of the past would discover that the "school of health," a creation of the early twenty-first century, had been forecast a hundred years earlier by an eminent surgeon of Cardiff. The "school of health," as Professor Sheen described it in his forward-looking address, would be an entirely new feature in the life of the community, a great self-contained organization devoting itself to research and practice in all matters pertaining to health, demonstrating every measure for the promotion of fitness and disease prevention, and creating by the evidence of its work a health conscience in the community. He first pointed out the dire toll taken by disease and unfitness. The general lowering of infant mortality had involved the survival of defectives; no steps were taken to prevent their propagation, and this class did not practise birth control. There was an enormous increase in poor relief, itself an index of unfitness. Unfortunately, morbidity statistics which might be compiled from national health insurance records were not available, but there was undoubtedly a great increase in claims for sickness benefit. Proceeding to describe in greater particularity the "school of health," Professor Sheen said that it would be a voluntary institution, free from outside control. He saw it situated in a great health park on the uplands of some southern county, its buildings perfectly designed for its purpose, but allowing of ready expansion and convertibility. The staff would be chiefly whole-time people, including not only members of the medical profession, but eugenists, sociologists, anthropologists, chemists, physicists, architects, engineers, experts in child study and education, all working for human welfare in their several provinces. The work of the school he discussed under several headings. One of the departments, as he saw it, would be entrusted with the furtherance of eugenic marriage by way of education of the individual. Part of the school's work would be to look after expectant mothers and furnish the necessary education in infant care and welfare. Child life and education would be one of the great interests of the school, for in the speaker's view measures of health and education were never to be dissociated, and the two Ministries might well be rolled into one. A directed child education would be one of the functions of the school, and he strongly maintained that such education could be directed to vocation without any sacrifice of its value in forming character. The school would contain a health clinic, as distinct from a clinic for disease, but curative medicine would also have its place, and there would be an associated hospital, but a hospital of a new kind. In selecting some of its patients preference would be given to those in the early stages of a malady—that is to say, those who were dealt with in the out-patient rooms of the ordinary hospital would be in-patients here. The hospital also would be a research institution, and the first question asked about each case would be, "Why is it, and how can it be prevented?" A psychiatric clinic would form another branch. He gave an impressive list of subjects which the school would study: environmental conditions; the distribution of population; the lay-out of estates; urban and rural life; clothing, climate, and air; sanitary services; food, drink, and drugs; occupational and recreational activities; psychology, and many more. The school would be a kind of health clearing-house, a place where health information would be received from every source, new things sifted, proved, accepted, or rejected. It would have the greatest health library in the world. Members of its staff would travel far and wide to give and receive information. The school would receive students, again eugenically selected, none being able to claim admission by any right. Some of them would pay their way, others would pay nothing, and yet others would be paid. The first students would be graduates, but later he hoped that ordinary medical students would learn here the great lessons of preventive medicine. It was almost pathetic to reflect to how small an extent the resolution of the General Medical Council that training in preventive medicine should permeate the whole curriculum had been fulfilled. His school would involve no interference with present-day medical training in this country, which he regarded as the best in the world. But he gave an outline of the ideal curriculum, in which, for one thing, the study of structure and function in health would go on side by side with their study in disease. Human physiology and anatomy would be studied as applied subjects, and their teachers would be men with a high degree of clinical and pathological knowledge, keeping in touch with modern advances. Discussion was called for at the close of the address, but little or none was forthcoming, the members present probably feeling that after Professor Sheen's eloquence any small talk would be an anticlimax.

IMMUNIZATION AGAINST SNAKE VENOMS.

The report for 1929–30 of the Walter and Eliza Hall Institute of Research in Pathology and Medicine, Melbourne, records further progress in the investigation of Australian snake venoms, of which we gave some account on December 7th, 1929 (p. 1071). In the experimental production of passive immunity to snake venoms it has been found that monovalent antivenenes are strictly specific, except with the venoms of species closely allied to those used in the preparation of the antivenenes, though even here the degree of non-specificity is very slight. With regard to active immunity it has seemed probable that specificity would be less strict, and work has been carried out at the Institute to throw light on this question. Six groups of guinea-pigs were immunized each against one of six different venoms, and after some months' treatment the survivors were tested by subcutaneous injection of lethal doses of other venoms. It was found that animals immunized by means of a venom of the tiger snake till they were able to withstand subcutaneous injection of fourteen lethal doses of this venom without symptoms were also immune to twelve lethal doses of copperhead venom and eighteen lethal doses of giant brown snake venom. On the other hand, this treatment afforded no

appreciable protection against the venom of the cobra or of the black snake, and only slight protection against the venom of the common brown snake. Guinea-pigs immunized to withstand nine lethal doses of copperhead venom showed no appreciable immunity to the venom of the cobra, death adder, black snake, or giant brown snake, but were immune to four lethal doses of tiger snake venom. By contrast, guinea-pigs immune to only two lethal doses of death adder venom could withstand ten lethal doses of copperhead venom or eight of the venom of the tiger snake. Immunity to cobra venom, however, conferred no appreciable immunity to the venom of copperhead, death adder, or tiger snake. Finally, animals immunized with daboia venom have no immunity to the venom of cobra, copperhead, death adder, or tiger snake. It is worth noting in interpreting these results that the tiger snake and copperhead are more closely allied zoologically than the other elapines studied, though each of the six snakes whose venoms were used for testing represents a separate genus. Cobra venom is more akin to that of the Australian elapines, its action being mainly haemorrhagic and neurotoxic; daboia venom is totally different, being viperine in general character. It appears, then, that in active immunity against snake venoms specificity is less strict than in passive immunity wth univalent serums. The degree of specificity seems to be determined by the zoological relation of the reptiles producing the venoms, which may or may not be paralleled by similarity in the "toxic constitution" of the venoms, and by that particular toxic action of the venom which is dominant in the species of animal used for the experiments. According to this report close species relationship between the reptile supplying the venom used for immunization and the reptile whose venom is used for testing seems to be even more important in determining non-specific protection than close similarity of the venoms in their toxic behaviour.

METHYL ALCOHOL FOR HOUSEHOLD USE.

One of the chief characteristics of the present century is the rapid advance of applied chemistry. New compounds are being continuously introduced for commercial and domestic service, and new uses found for substances already known. Unfortunately, this rapid progress sometimes results in the risks of wholesale poisoning, for there is a tendency for substances to be introduced for popular use without much attention being paid to their possible, or even their known, toxic properties. A recent example of this is reported from America.[1] It has been found possible to produce methyl alcohol (CH_3OH) at a very low price from water-gas ($CO + H_2$) and hydrogen, and this alcohol is now being introduced as an antifreeze mixture for radiators. Methyl alcohol is, however, a volatile cumulative poison. The minimal toxic dose undoubtedly varies very greatly for different individuals, and one of its effects is incurable blindness. This effect has been reported as having followed doses as small as a teaspoonful, and, moreover, both death and blindness have been produced by inhalation of the fumes of methyl alcohol. The course taken by the law in attempting to safeguard the health of the community is remarkably erratic. The presence of a trace of arsenic in a foodstuff is punished with severity, even in cases where it is nearly impossible for anyone to receive thereby a single therapeutic dose; on the other hand, there is remarkably little attention paid to protecting the public from the hazards of the widespread distribution of volatile toxic substances. It would appear reasonable to demand that before introducing into household use substances that are probably or certainly toxic, some tests should be made to ascertain the extent of the possible danger.

[1] *Journ. Amer. Med. Assoc.*, August 30th, p. 662.

FORMULAE FOR THE NEW PHARMACOPOEIA.

The Pharmacy Subcommittee of the Pharmacopoeia Commission has issued a report on certain aspects of the work carried out since its formation in September, 1929.[1] The subcommittee has had under review the pharmacy of certain preparations in the *British Pharmacopoeia*, 1914, referred to it by the Commission, and now presents recommendations relating to some formulae which need alteration. While it has not yet completed its work on all the proposed additions to the *Pharmacopoeia*, it suggests some new formulae and will include others in a later report. It recommends that in making solid extracts and certain other preparations, the use of industrial methylated spirit should be permitted, subject to the regulations of the Board of Customs and Excise. In each case the formula should be drawn up for the use of rectified spirit, and a note appended stating that "in making this preparation the alcohol may be replaced by industrial methylated spirit, diluted so as to be of equivalent alcoholic strength, provided that the statutory regulations governing the use of industrial methylated spirit are observed." In regard to glycerins, the subcommittee recommends that for convenience in manufacture the quantities in the formulae for these preparations should be expressed by weight. It recommends the inclusion in the *Pharmacopoeia* of concentrated infusions which, when diluted with seven times their volume of water, represent the fresh infusions. In the absence of an instruction to supply the fresh infusion (by adding the word "recens") it should be left to the discretion of the pharmacist to dispense either the fresh infusion or the product obtained by diluting the concentrated preparation. No concentrated infusion of digitalis should, however, be included, and the dispensing of fresh infusion should be required. A general process for the preparation of a uniform basis for lozenges is given in the report. A formula under the name of "unguentum simplex" is recommended as a base for certain of the official ointments which are now made with lard, and are accordingly liable to become rancid: "Wool fat, 50 grams; hard paraffin, 100 grams; soft paraffin, 850 grams. Melt together; stir until cold." Recommendations are also made in regard to the formulae for a number of liniments, mixtures, plasters, powders, resins, solutions, spirits, syrups, and tinctures; new formulae are proposed for pilula hydrargyri and oxymel of squill; and a general process is described for the preparation of aromatic waters. A tincture of ipecacuanha is suggested to take the place of vinum ipecacuanhae, anticipating the deletion of all "wines" from the next edition of the *Pharmacopoeia*. In the nature of things many of the subcommittee's recommendations concern pharmacists more than prescribers, but the hope is expressed that this report will receive wide circulation among members of the medical profession in order to secure criticisms of the statements made and suggestions for improving the proposed formulae. The Pharmacopoeia Commission therefore invites discussion of the report by medical practitioners, and welcomes their comments.

The Bradshaw Lecture before the Royal College of Surgeons of England will be given by Mr. J. Herbert Fisher on Thursday, November 13th, at 5 p.m. His subject is "Ocular muscles, movements, and judgements."

We regret to record the sudden death at Lausanne, on October 26th, of Dr. Waldemar M. Haffkine, C.I.E., whose work in connexion with the prevention of plague and cholera is well known. We hope to publish a biographical notice in an early issue.

[1] General Medical Council. Pharmacopoeia Commission. Reports of Subcommittees. I. Report of Pharmacy Subcommittee, August, 1930. London: 44, Hallam Street, W.1. (1s.)

THE GENESIS OF THE PHYSICIAN'S IDEAL.*

BY

The Right Rev. HERBERT HENSLEY HENSON, D.D.,
LORD BISHOP OF DURHAM.

When I received the invitation to address you to-day at the beginning of a new session of academic work, I was so sensible of the honour which was done to me that I could not refuse what had been so courteously asked; but when I faced the practical question, What shall be the subject of my address? I found it nowise easy to give a satisfactory answer. It was obviously out of my power to speak of anything which lay within the ambit of medical science, for my ignorance would be apparent, and might be even ludicrous. The occasion hardly lent itself to a sermon, a form of composition with which indeed I am not wholly unfamiliar, but which might not be as welcome to my audience as it would be convenient to myself. Finally I decided to select a subject which could not be wholly without interest to medical students, and which might fairly and even usefully be discussed by one who could not himself lay claim to that description. I am going to speak to you on the Genesis of the Physician's Ideal. Whether that rather pompous title carries to your minds the meaning which it carries to mine is not certain. In any case it will suffice for my purpose, and whatever dubiety belongs to it will be cleared away by the address itself. With so much of personal explanation, I betake myself to my duty.

Every man's career is mainly determined by three factors—his natural capacity, his education, and the circumstances in which he has to play his part in the drama of life. To these, which are universally recognized, I propose to add a fourth—namely, the ideal of his employment, which is established, and which perforce he has accepted. It is of the last only that I shall speak, though of course it is inseparably linked with the rest. When, however, we speak of a professional ideal we are at once arrested by the difficulty that such an ideal is hardly ever authoritatively defined. There are professional rules which must be obeyed; professional customs which may not safely be departed from; a professional casuistry which may not wisely be ignored. The Ideal inheres in these, and may be inferred from them, but they do not clearly define it. We may supplement their witness by changing our point of view, and regarding the profession not from within, but from without. What is the expectation with respect to professional conduct which reigns in the public mind, which determines the measure of social consequence which the members of the profession possess, and which forms the standard by which individuals are judged? Men's behaviour is shaped by the expectations which they evoke in the minds of their fellows hardly less than by the conscious intentions which fill their own. *Noblesse oblige* really means that public expectation has coercive power even over private conduct.

The Hippocratic Oath.

The physician in modern society holds a very high place. He is generally regarded with respect. It is not merely that his distinctive service is indispensable, and is universally required, but also that he commands the public confidence in a very notable degree, and has behind him a tradition of professional behaviour which is generally admired. It is assumed that he will be adequately trained; that he will be entirely honourable; that he will be patient, considerate, and assiduous; that he will be generous and even-minded, giving his service as frankly and fully to the poorest as to the richest of his patients; that he will be, in a quite astonishing measure, disinterested. We expect the doctor to be something more than a scientific specialist, skilled in his specific branch of work. We look for education and good manners. He must be welcome in society for his own sake. No doubt there is a measure of idealizing sentiment in this conception of the physician; but it is near enough to general experience to maintain itself in the teeth of all individual contradictions, and its existence is not only a remarkable evidence of the high level of medical professional habit in the modern world, but also a precious possession of the medical profession itself. The Ideal has, of course, never been realized fully in any individual. If it had been so realized it would have ceased to be the ideal. Like all ideals, it is a composite of which the component elements have been separately expressed. But the combination in a single picture sets before every medical student a goal which he must strive to reach. That picture was upheld to the physicians of ancient Hellas in the so-called "Hippocratic Oath." It was natural to link it with the name of Hippocrates, for he "will ever remain the type of the perfect physician." Let me quote a few sentences which I take from Dr. Charles Singer's charming article on "Medicine" in the volume entitled *The Legacy of Greece*. The ancient Greek physician accepted the following version of his professional duty:

> "I will follow that system of regimen which, according to my ability and judgement, I consider for the benefit of my patients, and abstain from whatever is deleterious and mischievous. I will give no deadly medicine to anyone if asked, nor suggest any such counsel; nor will I aid a woman to produce abortion. With purity and holiness I will pass my life and practise my Art. . . . Into whatsoever houses I enter, I will go there for the benefit of the sick, and will abstain from every act of mischief and corruption; and above all from seduction. . . . Whatever in my professional practice—or in connexion with it—I see or hear in the lives of men which ought not to be spoken of abroad, I will not divulge, deeming that on such matters we should be silent."

"Respected equally throughout the ages by Arab, Jew, and Christian," comments Dr. Singer, "the oath remains the watchword of the profession of medicine." It is only, however, in modern times that society generally has acknowledged in the medical profession such a standard of professional behaviour as the Hippocratic Oath demands. The brilliant dawn of Greek medical science was soon overcast, and succeeded by the "cloudy and dark day" of superstition and barbarism. It was not until comparatively recent times that the Greek tradition was recovered, and medicine became genuinely scientific in method.

The Pre-scientific Era.

The physicians of the past were the victims of their circumstances. In the pre-scientific era, which may perhaps be defined as the entire period before Harvey (ob. 1657), they were so badly handicapped by ignorance that their meagre successes in the curative art generated more suspicion than confidence. They were known to be often the heralds of death; they were seen to be often powerless to preserve life. Moreover, their services were sometimes sought for the purpose which they were so plainly able to serve. The death of individuals might be desirable for a variety of reasons, and the doctor's professional skill might be invoked by jealousy, hatred, and ambition, as well as by duty and pity. The popular imagination, which ever inclines to be morbid, magnified the facts, and on a very slight foundation raised a truly formidable fabric of suspicion. It is difficult to imagine a more damaging professional recommendation than that which the Roman people bestowed on the physician of the unpopular Pope Adrian VI, when they hastened to his house, on hearing the welcome intelligence of the Pontiff's decease, and hanged a wreath on the doctor's door inscribed "*To the deliverer of his country.*" It was an inevitable association of ideas which led them to connect Adrian's sudden demise with his physician's professional attentions. The suspicions of ignorance are as cruel as they are often unwarranted. Thus when Austregild, the queen of Guntram, knew that she was dying, she wreaked her indignation on the doctors who had failed to cure her. Summoning her royal husband to her bedside, she made him swear to have them slain as soon as she expired. I follow the chronicler:

> "So saying she gave up her unhappy soul. But the King, the funeral rites duly performed, was constrained by the oath sworn to his unjust queen, and fulfilled her wicked behest. For he ordered the two doctors who had served her well to be slain by the sword. It stood plain in the judgement of thinking men that such fulfilment might not be without sin."

* Introductory address to the University of Durham College of Medicine, Newcastle-upon-Tyne, October, 1930.

The profound pessimism which governed mediaeval thinking invested the very notion of curing diseases and thus cheating death with a doubtful if not actually irreligious character. Sorcery, magic, and witchcraft were closely connected with medicine, and these created a certain shrinking in orthodox minds. Moreover, it is certain that many disreputable quacks pretended to curative skill, and the circumstance that the best medical knowledge of the time was to be found among Jews, Mohammedans, and hereticks did not tend to reassure the public. Then the sinister connexion between the patient's misery and the physician's fees was never forgotten. Even so amiable and intelligent a writer as John Earle, writing in 1638, harps on this string. In his *Microcosmography* he includes a description of what he calls "a meer dull physician" as both hard and covetous:

"Anatomies, and other spectacles of mortality have hardened him, and he is no more struck with a funeral than a grave-maker. "In conclusion, he is a sucking consumptive, and a very brother to the worms, for they are both engendered out of man's corruption."

Similarly of "a surgeon" we are told:

"He deals with broken commodities, as a broken head or a mangled face, and his gains are very ill got, for he lives by the hurts of the commonwealth."

These are, of course, very ancient gibes. Pliny tells us that in his day they were hurled at the medical profession. The considerate casuistry by which doctors may rightly conceal from their patients the gloomy view which they may have formed of their patients' prospects, passed into the ill-sounding proverb, *Mentiris ut medicus*—"You lie like a doctor." And as late as the nineteenth century Byron repeats the hackneyed jeer with a characteristic touch of satire:

This is the way physicians mend or end us,
Secundum artem: but although we sneer
In health—when ill, we call them to attend us,
Without the least propensity to jeer;
While that "*hiatus maxime deflendus*,"
To be fill'd up by spade or mattock, 's near,
Instead of gliding graciously down Lethe,
We tease mild Baillie, or soft Abernethy.

Doctors in the seventeenth century, and indeed for long after, were suspected of learning by experiment on their patients, a half-truth which easily passed into the grossest injury. Jeremy Taylor, in his well-known treatise *Ductor Dubitantium*, quotes Pliny as complaining that physicians grow learned at our risks, and make their experiments at the cost of our deaths, so that they alone can kill a man with impunity; and he adds the plaintive comment that it is hard that the physician should grow wiser at no cheaper rate than the deaths of many patients. Fuller, writing about the middle of the seventeenth century, in his picture of the "Good Physician," lays down the maxim:

"*He handsels not his new experiments on the bodies of his patients.*—Letting loose mad receipts into the sick man's body, to try how well nature in him will fight against them, whilst himself stands by and sees the battle: except it be in desperate cases when death must be expelled by death."

Science and Humaneness.

The remarkable confidence with which the medical profession is now universally regarded has its root in the fact that there is now truly a Science of Medicine, and that the patient is no longer the victim of arbitrary empiricism or an unintelligent following of tradition. An essential element in our ideal of a doctor is scientific training, and (what is by no means the same thing) the scientific temper.

Humaneness hardly less than Science is integral to our conception of the ideal physician, and this, too, is a very recent acquisition. Surgery was long handicapped by the horror inspired in the popular mind by the indispensable methods of surgical training. Sentiment allied itself with the crudest religious beliefs to oppose the practice of dissecting dead bodies, which yet was essential to anatomical study. The surgeons were as insistent as the public was reluctant. Visitors to Scotland will have noticed the large iron cages, or railings, placed over graves which give so sinister an aspect to Scottish graveyards. They were devices to hinder the persistent efforts of the "resurrectionists," as they were grimly styled, who sought to supply, at large profit to themselves, the professors of anatomy with bodies for dissection by robbing the graves of freshly buried corpses. It is barely more than a century since the whole country was thrilled by the revolting story of Burke and Hare, two miscreants who had pursued for years a business of lucrative crime by selling to the surgeons the bodies of those whom they murdered. Such revelations of callousness and criminal greed created a great volume of repugnance in the public mind, and this could not but extend to the profession which was in some measure interested in such horrifying procedures. We know how, even at the present time, an irrational opposition to the practice of what is loosely called "vivisection" can sweep educated and normally reasonable people into extraordinary violations of equity and good sense. If, then, humaneness has come to be conspicuously associated with the popular conception of a physician, it is because the conditions of scientific research are more generally understood, and the processes of medical training are apparently related to the requirements of science.

The experimental method, which is the normal procedure of physical science, and the very condition of that marvellous development of medicine which is the conspicuous glory of the modern epoch, lent itself to the crudest misunderstanding in minds clouded by barbarous superstition and filled with ignorant suspicions. They did not see in experiment that patient interrogation of Nature which is the law of scientific advance, but only the expression of an irreligious curiosity or the indulgence of a fiendish cruelty. As the scientific atmosphere was created, and even the humblest ranks of society acquired a vague understanding of the scientific point of view, above all as the curative triumphs of medical science became generally known, this association of the physician with harshness and callousness to pain died in the popular mind, and was replaced by the more natural association with physical rescue and relief. Science and humaneness blended in the popular conception of the physician, and became so inseparable that in the common view the doctor was the symbol of beneficence. Few things are, in my judgement, more honourable to the medical profession than the note of trust and something like affection which marks the language of the poor when they speak of the doctor.

Some of you will have read an admirable novel, *My Brother Jonathan*, by Francis Brett Young, in which a charming picture, which is also true to life, of a general practitioner working among an industrial population is drawn by a master's hand. The doctor is shown in circumstances of exceptional difficulty winning by sheer generosity of service the trust and affection of the poorest people. In this connexion we may mention the influence of the medical officers, who within recent years have come to hold so important a place in the hierarchy of local government. They have thrown themselves with so much enthusiasm into the work of hygienic improvement that in many cases they have felt and spoken as the apostles of social reform. We may not unfitly call them the Tribunes of the People. The element of professional ambition was, of course, not absent. Medical officers also "magnified their office," and personal interest is never entirely separable from professional ambition. Nevertheless, it is certain that a higher motive entered, and that in many cases it carried men to great heights of unselfish and sometimes unpopular toil, and filled them with a generous enthusiasm for public service. I think our medical officers have made no mean contribution to the shaping of the Physician's Ideal.

Let us pass from the professional to the more personal aspects of our subject. I said that the modern physician is expected to be a cultivated and well-mannered man acceptable in society, which assigns to him an assured and dignified position. In antiquity it was generally otherwise. Nor is this surprising when we remember that physicians were largely slaves and freedmen, and generally quite uneducated. I borrow from Friedländer the following account of the physicians of imperial Rome:

"Medicine was, up to the last, largely in the hands of freedmen and slaves: Justinian authorized the maximum price (sixty gold-pieces) for slaves thus trained, eunuchs fetching only fifty. Jurists constantly speak of the services due from physicians'

trained freedmen: thus they had to visit their patrons' friends gratuitously. Patrons could also prevent their freedmen from setting up a competing practice, and with this object, compel them to accompany them on their own visits.

"Free-born physicians at Rome were mostly foreigners. If permanent residents, Julius Caesar enfranchised them, as also teachers. Augustus extended this by conferring civic immunity. Romans, according to Pliny, rarely learned this profession. . . .

"In antiquity there were no examinations and little responsibility: hence many unqualified practitioners thrust themselves into a lucrative profession, such as shoemakers, carpenters, dyers or smiths, just as unsuccessful doctors became corpse-bearers or professional gladiators; at any rate Martial scoffs at such, who in their new occupation practised the old one still. Amongst these quacks, makers of salves and officinal wares rank high. Galen says that most so-called physicians of his day could hardly read, and warns his colleagues of the necessity of good grammar in addressing patients: such physicians also would know nothing whatsoever of rhetoric and philosophy. Thessalus, an apprentice of his father, a weaver, as a doctor under Nero gained great vogue, and said all his knowledge had been won in six months. . . .

"Galen gives very definite counsel as to medical relations with the patient. His visits should be long or short, as his patient wished, whom he must not irk. Some doctors clumsily awake and irritate a patient by long speeches or noisy tread: such things must be avoided. . . .

"Some patients must be enlivened with anecdotes. The doctor must deport himself properly, not be pompous, affected, or cringing. . . . Many doctors acceded to their patients' every wish, giving them cold water, snow-cooled wine, baths, whenever requested. True, they thus found a ready key to many doors. They grew rich, had much power, and often had pages given them as pupils. The rich were the most rebellious patients: best avoided altogether, says Galen: but doctors had willy nilly to put up with their whims. Whilst disapproving of mere submissiveness, in special circumstances the physician might, against his better knowledge, indulge the patient in some comparatively harmless trifle: doctors, if loathed, are not obeyed."

It is sufficiently apparent that we have travelled a long way from the professional standard of the Hippocratic Oath; but the Romans were a coarse-minded and practical people, which vulgarized and degraded the intellectual treasure which they received from the Greeks whom they conquered, and medicine was no exception to the general rule.

The professional behaviour of the fashionable physician has been the mark of hostile criticism in modern literature, where "a good bedside manner" is often associated with insincerity and toadyism. You will remember how Anthony Trollope has drawn the portrait of the honourable physician in the plain-spoken Dr. Thorne, and set it in sharp contrast with that of his accommodating but insincere professional rival, Dr. Fillgrave. Bluntness of speech may, indeed, be prompted by something less respectable than honesty. I borrow an instance from the fascinating pages of Professor Trevelyan's latest historical publication. He is speaking of the drunkenness which disgraced English society in the reign of Queen Anne:

"The leading physician in the capital, Dr. Radcliffe, whose highly rewarded skill and generous disposition stand commemorated in one of the noblest buildings of his old University, was once sent for at an unseasonable moment to attend the Princess Anne. He blurted out over the bottle that 'Her Highness's distemper was nothing but the vapours.' This piece of truthfulness in wine, being reported at Court, had, his biographer tells us, the effect of permanently consigning the future queen and her family to other and less skilful hands—possibly with important consequences to the history of England."

Dr. Radcliffe's tongue was at all times more clever than well guided. In 1697 he was summoned to attend William III. "When he saw the King's swollen ankles, he said that he would not have the King's two legs for his three kingdoms." This gave such offence that William never saw him again. Of the famous Dr. Abernethy (1764–1831) it is recorded that he had a serious purpose in his notorious rudeness and even brutality of speech. Not only did he thus indicate his horror of "humbug," but he found, or thought that he found, that a masterly roughness commanded the confidence of his patients even better than an amiability, possibly suggestive of weakness, would have conciliated it. Happily most modern physicians have discovered a middle way between the toady's insincerity and the boor's rudeness. Certainly the Physician's Ideal includes culture and the courtesy which culture requires. Francis Bacon's counsel is marked by the shrewd wisdom which was characteristic of that famous man:

"Physicians are some of them so pleasing and conformable to the humour of the patient as they press not the true cure of the disease: and some other are so regular in proceeding according to art for the disease as they respect not sufficiently the condition of the patient. Take one of a middle temper or, if it may not be found in one man, combine two of either sort, and forget not to call as well the best acquainted with your body as the best reputed of for his faculty."

Mind and Body.

The ideal physician unites technical knowledge and a just understanding of the specific circumstances of his patient's case. Within the last generation the range of the physician's professional concern has been greatly extended. The sharp dividing line between the psychical and the physical has grown fainter, and tends to vanish away. Psychotherapy has attained a settled place in the procedure of medical science; and it has emphasized those aspects of the physician's task which are least technical and academic. The physical ills of men are seen in a larger context. Behind the familiar symptoms of physical disease lie forces and factors which are not physical, which can often but be guessed at, and which none the less condition the potency of the appropriate remedies. There is a disastrous reciprocity between mind and body. Disease may occasion such a depression of mind as may aggravate it, and even go far to make it incurable. The causes of mental depression may be ultimately moral and religious—a bad conscience or a superstitious belief. Shakespeare, in *Macbeth*, has pictured a doctor confessing his powerlessness in front of such morally conditioned physical distress. Must the pathetic appeal remain for ever unanswered?—

> Canst thou not minister to a mind diseas'd;
> Pluck from the memory a rooted sorrow;
> Raze out the written troubles of the brain;
> And, with some sweet oblivious antidote,
> Cleanse the stuff'd bosom of that perilous stuff,
> Which weighs upon the heart?

In this situation, where the physician *qua* physician is helpless, the clergyman may find the opportunity of exercising his distinctive ministry, and the two great curative professions find themselves in an alliance which is exalting to both. You will perhaps be familiar with that brilliant volume of the late Dr. Rivers, *Medicine, Magic, and Religion*. There that keen and honest thinker envisaged in the future a great reconciliation, which would reproduce with a difference the primitive harmony which specialization had broken up.

"If medicine," he says, "is to maintain its hold on certain aspects of disease which should come properly within its sphere, it must find that it has much to learn from the priest, if, indeed, some kind of collaboration between the two is not often desirable."

The Lambeth Conference set on record its conviction that "there is urgent need for co-operation between clergy and doctors, since spiritual and physical treatment are complementary, and equally necessary for true well-being." I think the Physician's Ideal includes a freedom from traditional prejudice which welcomes such an honest acceptance of scientific truth as will not exclude any new departure which it may require in professional habit.

The Labour and the Hire.

But I must not ignore the protest which may well be taking shape in some of your minds. It may be stated in this way: "When all is said about the Physician's Ideal, it remains the case that men become doctors primarily in order to earn their living. They look to be paid for their services, and their professional success is measured by their professional income. In the coarse phrase of the market-place, Fine words butter no parsnips. The doctor, like other wage-earners, has 'got to live.'" It must be frankly acknowledged that this protest expresses truth, but certainly not the whole truth. And the truth which it omits is so important that its omission may transform even the truth which it states into perilous falsehood. In all the higher human employments there is a certain incongruity between their true end and their immediate purpose. "Those three noble Professions which all civil

Commonwealths do honour," says Sir Thomas Browne in his quaint fashion, "are raised upon the fall of Adam, and are not any way exempt from their infirmities." The lawyer is ordained to secure justice, but litigation is the source of his wealth. The clergyman is ordained to promote goodness, but his benefice provides his income. The physician is ordained to promote health, but it is sickness that fills his purse. Lawyers, clergymen, and physicians are all tempted so to pursue the lower immediate purposes of their professional work as to forget its supreme and ultimate end. Just as they yield to this temptation, they lower the levels of their actual achievement, and become even professionally inefficient. For it is always true, and never so true as in the case of the nobler employments of men, that the higher the mark aimed at the higher is the mark actually reached. Aim lower, and you will hit lower. You cannot place a money value on the services of the lawyer, the clergyman, and the physician, for their distinctive service demands, over and above the professional duty, something personal which defies calculation. I suppose that is the reason why their remuneration is generally determined by conventional payments or fees, and is not left wholly to "the higgling of the market." The really great lawyer has a passion for justice; the really great clergyman has a passion for goodness; the really great physician has a passion for health—although it is true that, if all men were just, good, and healthy, there would be no demand for lawyers, clergymen, and physicians. They are all to that extent conspirators against their own professional importance.

You will have noticed that Sir Thomas Browne makes no mention of that great profession which holds so large a place in our modern world, and has its unchallenged supremacy in our universities—I mean the teaching profession. The reason is not doubtful. In that relatively simple age, teachers were generally also clergymen, and Sir Thomas Browne tacitly includes them under that description. The twentieth century is not as the seventeenth. It is familiar with a range of studies vastly greater, so that perforce the teaching profession has become independent, organized, and increasingly powerful. But teachers do not stand outside the general law. They also have to work with both a nearer and a more distant objective. Examinations have to be passed, and the teacher has to aim at securing his pupils' success; but always he has a higher end. He has to set forth the truth, and so to teach as to make his pupils also lovers and servants of the truth. If it shall so fall out that these ends are conflicting, so that to advocate current errors, dominant in the schools, will condition success in examinations by treason to the truth, then loyalty to his Ideal will require that the teacher should accept unpopularity, and even professional failure. Do undergraduates still read Browning? When I was at Oxford we were fond of his poem *A Grammarian's Funeral*, which illustrates wonderfully what I am now insisting upon. Here is the contrast between loyalty and treason:

> That low man seeks a little thing to do,
> Sees it and does it:
> This high man, with a great thing to pursue,
> Dies ere he knows it.
> That low man goes on adding one to one,
> His hundred's soon hit:
> This high man aiming at a million,
> Misses an unit.
> That has the world here—should he need the next,
> Let the world mind him!
> This, throwing himself on God, and unperplexed,
> Seeking shall find him.

Let me quote again from the *Religio Medici* of Sir Thomas Browne, which, though written as long ago as 1635, is eminently worth reading by the modern physician, and which I beg heartily to commend to you:

"I feel not in me those sordid and unchristian desires of my profession: I do not secretly implore and wish for Plagues, rejoice at Famines, revolve Ephemerides and Almanacks in expectation of malignant Aspects, fatal Conjunctions, and Eclipses. I rejoice not at unwholesome Springs, nor unseasonable Winters: my Prayer goes with the Husbandman's: I desire everything in its proper season, that neither men nor the times be put out of temper. Let me be sick myself, if sometimes the malady of my patient be not a disease unto me. I desire rather to cure his infirmities than my own necessities. Where I do him no good, methinks it is scarce honest gain: though I confess 'tis but the worthy salary of our well-intended endeavours. I am not only ashamed, but heartily sorry, that, besides death, there are diseases incurable: yet not for my own sake, or that they be beyond my art, but for the general cause and sake of humanity, whose common cause I apprehend as my own.

Loyalty to the Ideal.

The Physician's Ideal has been slowly and painfully gained in the teeth of many hostile forces; and if it is to be maintained and transmitted, it will only be by strenuous and high-minded effort. To-day, if I mistake not, it is threatened by some of the characteristic developments of our time. Specialization in medical study and practice may be indispensable, but it endangers none the less that largeness of interest and culture which has marked the greater physicians of the past. Contemporary politics cast their own shadows on the progress of medical science. Socialism is not friendly to the highest individual achievement. The democratic tendency to bring physicians into the category of State officials, and to organize their professional activities on conventional Civil Service lines, is not wholly favourable to the highest view of their work, and may lower that personal relation with their patients which has often been highly beneficial to both. "The years teach much which the days never knew," says a wise proverb, and we must not be hasty to condemn the untried. It is always easy to be unfair to the distinctive features of one's own time, very easy in the case of a man whose own experiences of society belong to the past. At least I am on safe ground when I insist—and this is the moral of my present address—that, whether as a State servant or as a private practitioner, the physician's efficiency will continue to be conditioned by his resolute loyalty to the Physician's Ideal.

"SCIENCE DISCIPLINE."

LECTURE BY SIR DAVID PRAIN.

Lieut.-Colonel Sir David Prain, LL.D., M.B., F.R.S., I.M.S. (ret.), delivered the second annual Alexander Pedler Lecture on October 22nd, in the University of Liverpool, under the joint auspices of the British Science Guild and the University. The subject of the lecture was "Science discipline."

Huxley, he said, held that in an ideal university a man should be able to obtain instruction in all forms of knowledge, and discipline in the use of all methods by which knowledge might be obtained. For him there were three forms of knowledge: the limits of one's individual powers, the uses to which these powers may be put, and the conditions under which these powers can be used. These forms of knowledge were the same for literature as for science, for science and literature were but two sides of the same shield. Science, however, no longer connoted all knowledge, but meant more particularly "natural knowledge." Science discipline, therefore, implied cultural exercise of every method by which natural knowledge could be obtained, as contrasted with science training, which implied technical exercise in any method by which natural knowledge might be employed.

The Purpose of Discipline.

The sole object of science training was to make an adequate number of scholars, already disciplined in the requisite natural knowledge, competent to give the general community effective scientific help, and confusion should be impossible between training and discipline in this sense. The purpose of discipline was twofold: on the one hand, to furnish those who wished to serve the community scientifically with the kind of natural knowledge that would enable them to profit by training for technical efficiency, and, on the other hand, to render all scholars in an ideal university competent to appreciate the scientific help afforded the community by those specially trained to give it. This second object was not less important than the first. And while the first of these ends had now

been largely attained, perhaps in due course the need for securing the second might come to be appreciated by those responsible for the organization of science discipline.

Technical and Cultural Faculties.

The fourteenth century faculties of Theology, Law, and Medicine were technical faculties, where everything about God, or Man, or Nature was taught to clerks who already knew something about everything. But it was found difficult to man the medical faculty, and the cultural faculty of arts was often deprived of a valuable "ingredient in education" by assigning to the technical faculty all suitably equipped teachers. The Church approved, eager to secure control of ethics and philosophy. In the next two centuries universities "complete with all the faculties" came into existence under ecclesiastical patronage, and a new spirit of criticism spread from the cultural to the technical faculties. If disputation led to confusion, there was compensation in the improvement in science discipline. Controlled experiment was substituted for empirical test. But, teachers who were prepared to abandon scholastic controversy could not resume instruction in a technical faculty for lack of the experimental discipline in themselves. There was cleavage. While Catholic Faith tolerated the "relief of man's estate," Reformed Faith could see in precautions against plague proof of "distrust in Providence." Men of science formed an "invisible college" outside the universities, where they could talk in safety. The sciences became the arts, and the arts the sciences. In the eighteenth century, when the English "common people" were "constant irreconcilable enemies of science," natural philosophers were thus led to leave application to the initiative of the arts and crafts, and the old distinction between an art and a science appeared in a new form, contrasting what "they were inclined to" with "what they had a mind to."

Association with a technical faculty enabled teachers of natural history to avoid this error for nearly a generation, and soon, as Huxley said, scholars who wished to obtain a training in physical science had to attend the instruction of the medical schools. Universities came to regard the teachers of the medical faculties as responsible for science discipline as well as training. Botany, by its return to the study of function, had made itself the first academic science to realize that "what people call applied science is nothing but the application of pure science to particular problems." It needed the lesson of the great war to convince our legislators of the truth of this remark, and an Association for the Advancement of Science had to reach its hundredth year before it found a president courageous enough to say that between pure and applied science there was no real distinction.

The Two Kinds of Science Discipline.

There was room for hope that academic opinion might now cease to consider second-rate advancement more important than first-rate application of natural knowledge. General cultural science discipline was the proper business of faculties of arts, not of science. A special scientific discipline, preparatory to technical training, also had its place within the universities, and demanded recognition and special organization. Sound practical instruction in the elementary facts and broad principles of biology should form part of the arts curriculum. The discipline in physiology that a prospective scholar of medicine must undergo might in itself provide a better education than much that was accepted under that name. With anatomy, it had its place in the science faculty. Huxley had been aware that with the necessity for direct practical perception of facts there arose the need for an amount of personal labour and a development of means and appliances, and he knew that these needs created difficulties that would not be removed until years of patient study had organized scientific teaching as well as, or better than, classical teaching. The absence of any serious attempt on the part of those entrusted with university organization to devote themselves to the "patient study of scientific teaching" in their faculties of arts was directly responsible for much of the justifiable disquietude felt by both teachers and students of natural knowledge to-day.

The failure to follow Huxley's advice, Sir David Prain said in conclusion, had been due not to disbelief in his judgement, but to the national propensity, which made neighbouring nations dislike us, for doing one thing when we imagined we were doing something else. It was of less consequence for teachers of science to fail to distinguish between the functions of a technical and a cultural faculty than to fail to make their universities understand the difference in method between the science discipline for culture and the science discipline that prepared for training. Teachers of literature, with a like problem before them, experienced no such difficulty in persuading their universities to do what they required.

SOCIETY OF MEDICAL OFFICERS OF HEALTH.

Annual Meeting and Presidential Address.

At the annual general meeting of the Society of Medical Officers of Health Professor Harold Kerr of Newcastle-upon-Tyne was installed president in succession to Dr. J. J. Buchan. Occasion was taken, on the retirement of Mr. George Elliston, for many years executive secretary of the society, to express the indebtedness which members felt to him for his services. Dr. G. F. Buchan, the treasurer, said that no man could have worked more carefully or skilfully in the financial interests of the society. Mr. Elliston became secretary when the financial position was very uncertain, but his careful administration of the society's affairs had achieved the best possible financial results, and the society found itself to-day in a sound and comfortable position. No society ever had a better secretary, and no treasurer a more active or capable or courteous colleague. Dr. Charles Porter, honorary editor of *Public Health*, paid an equally warm tribute to Mr. Elliston's services.

The Municipal Hospital.

The brief presidential address by Professor Kerr took the form of a statement of the position in Newcastle-upon-Tyne, in view of the changes brought about by the Local Government Act, 1929. The past year, said Professor Kerr, had been a most important epoch in the history of public health administration, and it was very fitting that at a time of such change the chair of the society should have been occupied by Dr. J. J. Buchan, whose authority (Bradford), ten years ago, gave a lead to the country by transforming the Poor Law hospital into a municipal institution. The pioneer work done in Bradford, and also in Aberdeen and (under Dr. Buchan's brother, Dr. G. F. Buchan, another past-president) in Willesden, should never be forgotten. Only those intimately concerned could appreciate the difficulties which were encountered in bringing about this now well-recognized piece of social reform. It was upon the medical officers of health that the first responsibility rested of guiding their respective authorities wisely so far as health administration was concerned. Hitherto, for the most part, the Poor Law hospitals, however acute the hospital shortage in the locality might be, had served only the destitute cases. In London there had been a measure of co-operation between the two classes of hospitals, and the same was true to a certain extent in a few of the larger towns, but in most areas there had been no co-operation at all. The guardians in the majority of places had done their utmost to popularize their services, but the Poor Law stigma remained a permanent objection. Newcastle was one of the areas where the guardians did everything in their power to attract private patients, but with comparatively little success. Their wards and equipment were excellent and up to date; there was also available a part-time consulting staff. But invariably there were plenty of empty beds in the Poor Law hospital, although the Royal Victoria Infirmary in the same city had an average of 2,000 on its waiting list.

Professor Kerr went on to describe in detail the equipping and staffing of the renamed Newcastle General Hospital, and the allocation of beds. For the present at least no out-patient department would be established other than for cases which had been discharged from the wards, and which it was desirable should be followed up. Nor would there be any special departments created giving similar facilities to those existing either at the Royal Victoria Infirmary or at a special hospital. The guardians had favoured whole-time appointments, although they were not prepared to pay attractive salaries. The policy of

part-time appointments had been decided on in the case of the municipal hospital. He mentioned the various salaries for these posts, and said that there had been no lack of applicants. In the case of the two directors, one on the medical and the other on the surgical side, Newcastle had been exceptionally fortunate in securing the services of a senior physician and surgeon, both of whom had recently retired under the age limit from the staff of the Royal Victoria Infirmary, and who had been closely associated with the medical school. For teaching purposes the wards of the municipal hospital would be affiliated with those of the Royal Victoria Infirmary. The medical superintendent, a whole-time officer, would remain, but he would act only as an administrative officer, being relieved of clinical work, except in regard to mental cases, in which field he happened to be an expert. A shortage of nursing staff had also been made good.

Another rearrangement did away with one great objection to the old Poor Law hospital from the point of view of prospective patients—namely, the interposition of the relieving officer in all cases. With certain excepted cases, admission would now be arranged for by direct communication between the private doctor and the medical superintendent. Ultimately, it was proposed to set up a kind of bureau or clearing-house which should allocate patients to an appropriate institution and avoid overlapping. It was anticipated that a gradually increasing admission rate would follow upon this reorganization, and that the municipal hospital would be availed of by people belonging to the lower middle class and working class who could not afford nursing-home fees, and had an objection to accepting charity. At first the accommodation would be the same for all; ultimately it might be possible to provide private wards for people who could afford to pay for them, but as the Royal Victoria Infirmary had already provided private wards it seemed undesirable that the municipal hospital should do so. What would be the effect of all this upon the finances of the voluntary hospitals? Many opinions had been expressed, but there was only too good reason to expect a diminution of the smaller voluntary contributions. The larger voluntary contributions, he thought, were not so likely to disappear, and the attraction of having a bed or ward named after the donor would still appeal to many. As it was extremely undesirable that the voluntary hospitals should be weakened, contributory schemes, like that organized on Merseyside, should by all means be supported. Such schemes should solve the question of the financial position of the voluntary hospital. One matter to which his authority had given a good deal of attention was the establishment of a central record office, where all assistance given from public or from voluntary sources should be noted, so that abuse and overlapping were checked. One urgent need was general hospital treatment of mental breakdown not amounting to insanity or certifiable. It was estimated by the medical superintendent of Newcastle General Hospital, who, as already stated, was an expert in mental disorders, that no fewer than 150 beds would be necessary for these "pre-mental" cases.

The Problem in London.

Dr. WILLIAM BRANDER, principal medical officer of the General Hospitals Division of the London County Council, explained that, owing to the magnitude and enormous complexity of the London hospital service, the problem in London was extremely difficult, and the organization which might prove the most suitable for London was by no means necessarily the best for any other town in England and Wales. As a result of the Local Government Act, the General Hospitals Division of the London County Council now had under its administration twenty-nine separate hospitals containing upwards of 16,000 beds, and fourteen other institutions containing roughly 11,500 beds, together with thirty-four special hospitals and institutions with nearly 15,000 beds, transferred from the Metropolitan Asylums Board. The number of mental hospitals now under the control of the London County Council, including those transferred from the Metropolitan Asylums Board, was twenty, with accommodation for upwards of 31,000 cases. The transferred Poor Law infirmaries were, speaking generally, well built, well equipped, and well staffed; some of them could fairly be described as first-class hospitals, while others were below standard. With regard to the out-patient departments, at present such departments were already provided at nine of the Council's general hospitals, and undoubtedly resulted in an economy in beds. It was desired to avoid duplicating the out-patient system of the voluntary hospitals, and therefore it was proposed to limit out-patient departments to the following: casualties, continuation and after-treatment of discharged surgical patients, consultations on patients referred by the district medical officers, and ante-natal clinical work. With regard to the appropriation of hospital accommodation, there was very little surplus accommodation in London, and what existed would be required to meet the statutory obligation with regard to the destitute sick. On the question of the lines on which whole-time or part-time staffs should be maintained, he thought that matters were not yet ripe enough for dogmatism. Like Professor Kerr, he paid a tribute to the work of boards of guardians, handicapped as they had been by limited powers.

Dr. J. J. BUCHAN confessed himself unable to see how the voluntary hospitals of the country could go on in the future as they had done in the past, holding themselves out as charitable institutions, and providing the same accommodation for the sick as the local authorities were out to provide.

CONFERENCE ON MATERNAL MORTALITY.

THE MINISTER OF HEALTH ON NATIONAL MATERNITY SCHEMES.

THE fifth Conference on Maternal Mortality, organized by the Maternal Mortality Committee, a voluntary organization, and consisting of delegates from about 300 bodies, voluntary and municipal, from all parts of England, was held at the Friends House, Euston Road, on October 27th.

The DUCHESS OF ATHOLL, M.P., who presided, congratulated those concerned on the organization of the successive conferences (the moving spirits of which had been Mrs. H. J. Tennant and Miss Gertrude Tuckwell, member of the Royal Commission on National Health Insurance) in that the actual facts of the excessive mortality among mothers, for which the conference had pressed from the beginning, had now been brought out in the interim report of the Departmental Committee. She went on to point out that an admirable foundation had already been laid for a complete national service. Over 80 per cent. of the population in the rural areas were now within reach of a trained midwife, and more than 70 per cent. of that provision had been made by district nursing associations. There were only five counties (and these included such small ones as Rutland and the Isle of Ely) which were without a nursing association or federation of associations covering the whole area. In the towns there were now 440 municipal ante-natal clinics, and 166 such clinics conducted by voluntary societies, exclusive of some 400 infant welfare centres, where a measure of ante-natal advice could be obtained.

Mr. ARTHUR GREENWOOD, Minister of Health, began with a reference to the stubbornness of the problem. Maternal mortality remained one of the black marks against the health service of this country. Infant mortality and the general death rate had been lowered and some diseases stamped out, yet deaths from the normal process of maternity were as numerous as ever. It was clear, from the information recently received, that some 50 per cent. of maternal deaths were avoidable. The maternity and child welfare service and the national health insurance system had done something to relieve the situation, but had produced as yet no effective remedy. If the best that obtained in certain localities were put into operation in all localities a different tale might be told. Unfortunately, all local authorities were not equally good. If every local authority employed to the full extent the powers it now possessed there would be a marked impression on the maternal death rate. "Sometimes," said Mr. Greenwood, "I wish I were a Mussolini, but, fortunately or unfortunately, we do our permanent work in this country on the basis of maximum agreement. I am going shortly to appeal to all local authorities to try to live up to the standard of the best." Behind the powers which might be exercised by local authorities lay another problem. He knew of areas where ante-natal provision was made

and only a minority of pregnant women took advantage of it. It was of no use badgering local authorities if in the end women did not use these facilities. But that was not all. He always believed in war on the widest possible front. Committee after committee had stated that it was essential to establish a national maternity service. Schemes had been brought forward for mobilizing on a national scale all the forces concerned directly and indirectly with this problem. The education of the doctor and of the midwife had an important bearing on the question. It was clear that a number of deaths were due to the fact that those who handled the cases were lacking in knowledge and, it might be here and there, were lacking in care. He hoped it would be possible to do something in the very near future to ensure better education for those who were concerned strictly in the maternity service, and to keep them abreast of the results of most recent research. It was most important to give practitioners facilities for "refreshing themselves in that new tide of knowledge which has come forth since they bathed in the stream," and with the improvement in medical education, which he thought it would be possible to bring about with the good will of all concerned, must go post-graduate study. He had read with the greatest interest every proposal made of recent years for a national maternity service, though he was not sure that he had yet met a person who quite understood what it meant. It was the easiest thing to invent phrases, but behind that phrase, which represented an ideal and an objective, lay a good many difficulties. He was satisfied that the best was not to be obtained from the available resources unless the good will of the people most concerned in the problem was secured. Therefore he had not got a national maternity scheme cut and dried to place before the conference that day. But the Government was committed to a national maternity scheme which should fulfil all the principles laid down in the successive reports and embody the principles of the resolution presently to be moved. The scheme could only be framed in detail when those of them who would have to work it in the long run sat down and tried to come to a general understanding. "If we are to utilize all that is good in the various agencies now operating—the medical profession, the approved societies, and the local authorities—it is not going to be an easy task. I should like to bring the administration of the national health insurance scheme and the local health authorities under one great national umbrella, so as to arrive at a really effective maternity scheme on a national basis. That I believe to be the only effective way of dealing with this problem. But I should not be fair to the voluntary agencies on the one hand, and the medical profession and approved societies on the other, if I pretended I could do it without their whole-hearted co-operation." He would do everything in his power to bring into being a national maternity scheme which would stamp out the disgrace of unnecessary maternal deaths, believing as he did that, by a proper mobilization of all the forces, many of the so-called "inevitable" accidents of maternity could be avoided. It was difficult during a stage of negotiation to talk freely; he did not want to suggest that any of the agencies concerned in this problem were likely to be obstructive, but he did not think he would be doing the cause a service if he were to be too specific before he had taken common counsel as to the proposals which had come forward in the various reports. He wanted a general laying together of heads for the production of the best practical scheme for a national materity service.

Terms of Resolution.

Viscountess Erleigh moved, and Dr. Marion Phillips, M.P., seconded, the following resolution:

> This conference declares its agreement with the recommendations of the report which supports its previous demands for an effective national maternity service based on (1) an increase in the length and content of the training of medical students in obstetrics, and on (2) essential services to be provided as follows:
>
> (*a*) The provision in every case of the services of a qualified midwife to act either as midwife or as maternity nurse.
>
> (*b*) The provision of a doctor to carry out ante-natal and post-natal examination in every case, and to attend during pregnancy, labour, and the puerperium, as may prove necessary, all cases showing any abnormality.
>
> (*c*) The provision of a consultant, when desired by the doctor in attendance, during pregnancy, labour, and the puerperium.
>
> (*d*) The provision of hospital beds for such cases as need institutional care.
>
> (*e*) The provision of certain ancillary services—for example, transport, sterilized equipment, laboratory facilities.
>
> The conference recognizes that some of the services now in operation have been due to voluntary effort. It urges the co-ordination of such voluntary effort with the work of public authorities in order to enlist the widest possible interest and support in solving this problem, and expresses its conviction that the departmental committee is right in its conclusion that full success in reducing maternal death and morbidity can only be obtained by the co-ordination and extension of the various services in a national maternity service.

British Medical Association Support.

Dr. H. B. Brackenbury, Chairman of Council of the British Medical Association, said that the resolution had the emphatic support of the organized medical profession. It would be strange if it were not so, and he might be forgiven for calling attention to the fact that, just as was the case with the school medical service, so with regard to this matter, it was the medical profession which first urged on the attention of the public the necessity for it, and the British Medical Association which first formulated a concrete scheme. It was a welcome and somewhat astonishing thing that the schemes which had been proposed by responsible bodies like the British Medical Asso-tion, the Medical Women's Federation, and the two Departmental Committees were in substantial agreement as to all the principles required for the establishment of such a service. Only administrative questions remained to be dealt with, but this was a region of greater difficulty, because of the various interests which had to be considered. From the fact that there was a great measure of unanimity in demanding that certain action be taken, it did not follow that the politicians and administrators would immediately, or at an early date, take that action. There was need for a continuance of the education and propaganda which had been undertaken by the conference, so that whatever Government might be in power the necessity for giving prompt and careful attention to this question would not be overlooked. The conference contained representatives of the three chief political parties, and all parties had been made to realize the importance of this question and had expressed their willingness at the proper moment to deal with it. It was necessary to keep it to the forefront, so that, whatever the vicissitudes of political life, it might have a prominent place in the programme for the immediate future. Dr. Brackenbury pointed out also that although the Ministry of Health and others might at present be quite wise in urging that all the existing powers which the Legislature had given to local authorities should be put into effect, and although it might be true that the time was not immediately favourable to a very large expenditure of public money on the establishment of a new social service, yet anything which was done as a temporary or tentative measure must have the complete national maternity service idea in view, and must not be such as to place any obstacles in the way, or materially to delay, the development of such a service. There was sometimes a danger of provisional methods of tackling problems leading to postponement of the one complete thing without which success was unattainable.

General Discussion.

Dr. Rhoda Adamson of Leeds, speaking as a teacher of midwifery, said that in her hospital 1,500 deliveries were dealt with annually, and last year there were 27 maternal deaths; 21 of these, however, occurred among the 246 cases which came in late on in labour. There were six deaths in the "booked" cases which had had ante-natal care. Of these six, one was a true accident of midwifery, another was the case of a woman who was a bed-ridden paralytic suffering from severe disease, and ought never to have been a mother. This left four maternal deaths unexplained

out of more than 1,200 deliveries. She complained that ante-natal care was not sufficient. The women were not seen until they were actually expectant mothers. She felt that women should be examined beforehand to ascertain whether they were fit to become mothers, and that a great deal was to be said for requiring every girl to undergo a medical examination before marriage; there were some women who should not be subjected to the risk of maternity. She described the system at Leeds whereby ante-natal care was arranged for the expectant mother. There was a "black list" of patients who were not allowed to be booked by a midwife, because something had gone wrong in a previous labour; these must book a doctor or go to the maternity hospital. If any abnormality was found on which a second opinion was desired, the patient was sent to the ante-natal department of the local maternity hospital, where proper examination was made. Any general practitioner in Leeds in charge of a maternity case could call in a consultant from a panel—the panel consisting of members of the honorary surgical obstetric staff of the maternity hospital—during pregnancy, labour, or the lying-in period. The account for the consultant's services went to the maternity and child welfare committee, which took the economic circumstances of the patient into account, and decided whether the fee should be recovered in whole or in part from her. There was never any argument about the payment of the consultant.

Lady SELBORNE urged that medical men should not think of midwifery as a minor part of their training. She desired to see a special degree of "Doctor of Midwifery," without which no doctor should be allowed to undertake a confinement. Mrs. L'ESTRANGE MALONE regretted the absence of any reference in the resolution to the need for home helps for the mother, and also to the provision of milk for expectant and nursing mothers. It was within the power of local authorities to make this provision, but the power was not much used. She also pleaded that the permission given by the Minister should be taken advantage of by local authorities, and information on birth control be given at infant welfare centres to married women who needed it on medical grounds. Another speaker reminded the conference that sepsis following induced abortion was a very frequent cause of maternal deaths; she had taken a secret ballot of some women attending a health lecture, and out of twenty-one of those who had been pregnant, sixteen confessed that they had themselves terminated a pregnancy without medical advice. The remedy, said this lady, was birth control. On the other hand, another speaker, a member of the Buckinghamshire County Council, ascribed a great deal of maternal mortality to the unskilled and unaseptic use of contraceptive methods. One other lady made an attack on the medical profession; doctors, she said, shielded each other through thick and thin; she urged that there ought to be a coroner's inquest on every woman who died in childbirth.

With the addition of "home helps" to the ancillary services which should be provided in a maternity service, the resolution was carried unanimously.

Scotland.

Radiology Department of Glasgow Western Infirmary.

THE new radiological department of Glasgow Western Infirmary was formally opened on October 24th by Mrs. R. D. MacGregor, in the presence of a large and representative company. Colonel J. A. Roxburgh, chairman of the board of governors, presided, and an address on the advancement of medicine, with special reference to radiology, was delivered by Dr. C. O. Hawthorne, chairman of the Representative Body of the British Medical Association. The new department, which is situated in Dumbarton Road, is equipped both for diagnostic work and for *x*-ray and radium therapy. In his address Dr. Hawthorne said that clinical study was being aided and reinforced to an increasing extent by laboratory studies, and the relations between these two methods was a matter of theoretical interest and of practical policy. Most of the knowledge of medicine and surgery they possessed had been created by bedside observations and experience, and by the suggestions and conclusions to which these observations had given rise. The notion that a patient's ills and requirements could be determined by some form of scientific test made in a laboratory by an observer who had never seen the sick man was only less fantastic than the claim that, given a film of blood on a piece of blotting-paper and some form of magical or electric box, there would be promptly revealed all the pathological disturbances of which the patient was a victim, and even his opinions. The fundamental proposition, as he saw it, was that no diagnostic conclusion could be safely reached, and no treatment wisely undertaken, unless a complete knowledge of the individual had been acquired at the bedside, where he was regarded both as a patient and as a man. Scientific discoveries and tests might contribute useful information relating to the prevention, recognition, and treatment of disease, but they could not take the place of bedside medicine. With regard to *x*-ray examination, the delicate, complicated, and costly machines that were now available gave greatly improved and more clearly defined pictures; they shortened the period of exposure, and they gave complete protection to the operator, so that never again would the pathetic story be heard of doctors losing their lives or limbs as the result of working with an *x*-ray apparatus. Just as the discovery of *x* rays in a physical laboratory had given them a radiological institute with all its possibilities, so discoveries in electricity, chemistry, and biochemistry had made their contributions to the knowledge of disease and the treatment of patients. Conspicuous at the present day was the institute for the study of radium, and knowledge was gradually being gained both of its uses and its dangers. The uses of radium were not yet by any means fully defined, and were apt to be rather exaggerated in the newspapers. It was an element that was safe only in the hands of a specially trained and highly competent expert. The work done in all these departments was linked with the efficient treatment of patients. Such institutes required space, equipment, and maintenance, and therefore made a heavy charge upon the Infirmary funds. Against this cost, however, had to be placed the efficient treatment of patients, the development in the community of a body of highly trained physicians and surgeons, opportunities for research and new discoveries, the adequate training of medical students, and the training of nurses. It was in these results and services that justification could be found for the liberal policy of which the new radiological institute and its companion organizations were an expression.

Combe Trust Health Lectures.

The first of a series of health lectures arranged by the Combe Trust was delivered in Edinburgh, on October 22nd, by Dr. Chalmers Watson, who took as his subject "The newer outlook on medicine." Dr. J. Parlane Kinloch, chief medical officer of the Department of Health for Scotland, who presided, said they were passing through a very significant period, for a great new health charter had just been formulated in the Local Government Act of 1929. In Edinburgh all the widespread services dealing with health, with the single exception of national health insurance, had been brought under the town council; this afforded a unique opportunity. He thought it was only a matter of time before national health insurance would also come directly within the province of town councils. They had the finest possible medical personnel, but about a fifth of the patients of the family doctor could not be properly diagnosed or treated without the support of a sufficient institutional service. It would be the duty of the health administration to make this provision for every practitioner, although a great field had yet to be explored. Such a service, however, implied that the individual was sufficiently educated to take advantage of it.

Dr. Chalmers Watson said that the practice of medicine might be fairly correctly regarded as medical engineering.

On this analogy a modern motor show provided a revelation of what could be done in the short period of thirty or forty years by a judicious combination of sustained thought and high technical skill. If even a fraction of the thinking power that had been expended on the development of the motor car were directed by the community towards securing the efficiency of the human machine, there could be no doubt that in a few decades the physique and health of the nation would be transformed. The newer outlook on medicine implied consideration of two points—namely, how much of disease was preventable, and what steps were to be taken to prevent it. Great improvements had been recorded in the past thirty years in tuberculosis, child welfare, schemes for venereal disease, and so forth, but the present hospital services were admittedly defective in meeting the growing requirements of the community. Progress in preventive medicine, in his opinion, lay in two important directions: one might be summed up in housing, and the second in nutrition. He considered that nutrition was the basis of health, and that the propagation of knowledge of this subject among all sections of the community was essential.

Edinburgh Royal Infirmary Appeal.

The managers of the Royal Infirmary of Edinburgh have now issued an appeal for £500,000 in support of the bicentenary extension, referred to in the *British Medical Journal* of May 24th (p. 971). The appeal points out that the Infirmary was founded, and has been maintained for two centuries, by voluntary effort, and that during this time it has brought fame to the city of Edinburgh through its school of medicine. In the middle of the eighteenth century the system of teaching pursued at this medical school was an inspiration and example to pioneer schools of the New World, which were founded on the methods practised in Edinburgh. It was in the wards of the old Royal Infirmary that James Young Simpson in 1847 successfully introduced the use of chloroform anaesthesia, and where Joseph Lister in the succeeding decade laid the foundations of a new era in the art of surgery. During the two hundred years that have elapsed since 1729—when the Infirmary was founded with six beds—continuous development and extension have taken place. The present institution in Lauriston Place has 1,000 beds, and nearly 20,000 patients are treated annually in its wards. This hospital centre ministers to a large area of Scotland, as well as more distant places. It is also an integral part of the Edinburgh School of Medicine in providing facilities for the education of medical students and the training of nurses. The immediate requirements of the Infirmary are threefold. The first is to provide extra accommodation for a waiting list, which has on an average between 2,000 and 3,000 names. In the second place, a combined obstetrical and gynaecological department of 240 beds, with antenatal and out-patient departments, is to be erected as the result of co-operation with the Royal Maternity and Simpson Memorial Hospital. In the third place, a new home for nurses, capable of making provision for 400 nurses, forms a definite part of the scheme. The acquisition of the grounds and buildings of George Watson's College, situated immediately to the west of the institution, in the autumn of 1931, will provide the site for the contemplated extension. The site is estimated to cost approximately £100,000, the remaining £400,000 being required for the building and equipment of the maternity and gynaecological hospital, the nurses' home, and for other arrangements.

Scottish Asylums' Pathological Scheme.

In the thirty-third annual report of the Scottish Asylums' Pathological Scheme the Board points out that, in addition to the routine work done by the laboratory for contributing hospitals, a considerable amount of research has been carried out during the year by Dr. F. E. Reynolds and his staff. The most important contribution embodies the results of investigations into the pathways of infection to the brain from neighbouring foci of infection, for which Dr. Reynolds was awarded a gold medal on graduating at the University of Edinburgh. Other publications included pathological studies of cerebral tumours, published in *Brain*, and of the later manifestations of encephalitis lethargica, which appeared in the *Journal of Neurology and Psychopathology*. The Board notes with appreciation the considerable extension of Dr. Reynolds's teaching work in the University of Edinburgh, and especially his co-operation with Professor Edwin Bramwell on the clinical side, and with Professor W. T. Ritchie in systematic medicine. Acknowledgements are made of grants from the Medical Research Council, the Carnegie Trust, and the Moray Fund (University of Edinburgh).

Bequest to Glasgow Royal Infirmary.

Intimation has been received by the managers of the Glasgow Royal Infirmary of a bequest by the late Miss Margaret Clarke of Glasgow, who left the residue of her estate, estimated to be about £20,000, to be applied to the convalescent home of the Infirmary to be erected at Canniesburn. This sum is in addition to a gift of £10,000 made to the Infirmary for this purpose in 1925. The donations are intended to commemorate her father, Dr. Samuel Clarke, a well-known physician in Glasgow about seventy years ago, who took much interest in the Royal Infirmary, and of his father, Dr. Andrew Clarke, who practised as a physician in Glasgow in the eighteenth century. The Infirmary possesses a site for this auxiliary hospital, for which £43,000 has already been subscribed. Further support, however, is required in order that the scheme may proceed, and so greatly relieve the pressure at the Royal Infirmary.

England and Wales.

"Rheumatismus Specificus."

A Chadwick Public Lecture on the significance of rheumatism in youth and middle age was given by Dr. Francis Bach in the Hastings Hall of the British Medical Association's House on October 23rd, with Sir William J. Collins in the chair. Dr. Bach emphasized the importance of rheumatism as a national and international problem. "It cripples the leg of the labourer on the soil and the arm of the toiler on the bench, and starts a life of cardiac invalidism for his child." Of every 1,000 persons insured, 28 were suffering from some form of chronic rheumatism, and of every 100 school children, 10 were suffering from some form of juvenile rheumatism. He described his work in London, and the impression he had gained from recent studies in North America, Germany, and Scandinavia. He regarded "rheumatic fever" as a manifestation of specific infectious disease for which he used the term "rheumatismus specificus" to differentiate it from other forms of so-called rheumatism. It damaged in particular the heart, blood vessels, joints, and nervous system. Eight out of every ten cases of organic heart disease recognized in persons under 40 years of age were due to this infection. It was the cause of nearly every case of heart disease in childhood, and in the first years of industrial life or complicating pregnancy and childbirth; and two out of three cases of heart failure in middle life were due to it. In England and Wales 20,000 persons died each year from the effects of "rheumatismus specificus"—in other words, from rheumatic fever and the manifestations of rheumatic heart disease. It was therefore an important public health problem. The disease was equally common in America and Germany, but the picture differed. Whereas in this country the joint manifestations were common, in North America and Scandinavia environmental conditions tended to modify them; but the essential features—infection of the heart and blood vessels—were found in children and young men and women in those countries as commonly as in England. Dr. Bach then described the organized effort in North America to fight this disease. He emphasized the value of a common classification, such as that in use in the majority of American clinics, and of organized statistical work. The importance of rheumatic heart disease as a cause of maternal mortality justified the place of the heart specialist in the ante-natal clinic. After referring to the value of vocational guidance and workshops for cardiac cripples, the lecturer ended with a plea for further research in the

laboratory, and insisted that the essential lines of progress to-day were those preached a hundred years ago by Chadwick—namely, elimination of poverty and overcrowding, and improvement of the dwellings of the poor.

Guy's Hospital Annual Report.

During the past six years the tale of those treated as in-patients at Guy's Hospital has shown a steady increase; in 1924 the numbers reached 10,017, while the annual report for 1929 gives a total of 11,800. The inevitable increase in expenditure has not, unfortunately, been balanced by the income, although the deficit for 1929 was little more than half that of the preceding year. The governors are not inclined to take too gloomy a view of hospital finance, feeling that it is creditable that a charity only about a third of whose expenses are met by endowments should be able to meet 95 per cent. of its liabilities through a period of high taxation and falling trade. They feel little doubt that an increase in national prosperity will mean an equal rise in the fortunes of the voluntary hospitals. Although the number of available beds remains unchanged at 646, admissions increased during the year by about 250 more than the number for 1928, and the average stay of each patient decreased from 18¾ to 18 days. The mortality rate maintains the level of the previous year—namely, 5.2 per cent. Some remarkable statistics showing the falling off in the consumption of stimulants, notably of beer, are included in the report. Even the quantity of brandy used has fallen from 250 gallons in 1859 to 71 during the past year, while the number of patients under treatment has increased from 4,668 to 11,245 in the same interval. Nearly 400 patients were sent to convalescent homes during 1929, and although there was a slight decline in the individual numbers of out-patients the total number of attendances exceeded those of the previous year. There has been a steady decline in the applications for maternity cards, which have fallen from 3,818 in 1908 to 1,639 in 1929. In the dental department a record has been established in the number of dentures authorized, 1,417 having been supplied during the year at a cost to each patient of £2 10s. There has also been an increase in the attendances at the Massage Department, and thirty-nine pupils completed their training as masseuses during the year. In the Nurses' School the period of preliminary training has been increased from seven to fifteen weeks, in order that a probationer may cover the entire syllabus for the Preliminary State Examination, with the exception of lectures on the theory and practice of nursing, before she enters the wards. This should have the desirable result of diminishing the strain under which a nurse lives during her first few weeks of ward work; while still in the preliminary training school, pupils will be drafted into the wards for two hours daily, during which time a corresponding number of the senior nurses will be released from duty, and at liberty to study for examinations.

Tuberculosis in Hertford.

Dr. A. P. Ford, deputy medical officer of health and tuberculosis officer for the county of Hertford, contributes to the report on tuberculosis in the county of Hertford for the year 1929 an interesting account of the value of certain forms of special treatment for tuberculosis which have been employed by him both in the sanatorium and at the dispensary during the year. Although for most early cases rest in suitable surroundings, combined later with graduated exercise, suffices to restore the patient to working capacity, in some instances a course of tuberculin injections is given either in the sanatorium or after the patient's discharge, with the object of making the repair more durable. When the disease is advanced the induction of artificial pneumothorax is recommended, provided that the better lung is not too much damaged. In advanced febrile cases a course of sanocrysin is given in the hope of rendering hospital patients suitable for treatment at the sanatorium. At the beginning of the year there were fifty-six patients undergoing tuberculin treatment at the dispensaries in the eastern side of the county, and during the year fifty-four other patients started the course. Of these 110 patients, 28 were still under treatment at the end of the year; 37 of the 1928 cases and 18 of the 1929 cases had completed the course; and in the remaining patients the injections were stopped either because the patient was not responding satisfactorily, or because for some reason or other the patient was unable to attend for treatment. According to Dr. Ford the results, on the whole, have been decidedly satisfactory. He records similarly good results from the induction of artificial pneumothorax: seven patients have now had a full course of treatment—namely, three years or more of collapse followed by expansion of the lung. In two of these only partial collapse was secured, but they are both well and able to work. Of the remaining five, four are apparently cured, while the other is well and at work. During the year eight out of twenty-two patients in whom it was attempted to induce artificial pneumothorax were found to be unsuitable on account of adhesions. In seven patients the treatment has been discontinued; in four of these the course had been completed; in the remaining three the space became obliterated. One patient who had shown marked improvement while receiving the treatment for two years died, owing to spread of the disease to the other lung. Dr. Ford's experience with sanocrysin has, on the whole, been encouraging. In seventeen out of twenty-six advanced febrile cases in which the treatment was tried the injections were discontinued before the course could be completed, either because no improvement was being obtained, or because some complication had arisen. Of the nine who completed the course, seven were benefited, three to a marked extent. Dr. Ford concludes that treatment by sanocrysin should be tried in all febrile cases that do not respond to ordinary treatment.

Courses at the Maudsley Hospital.

A course of lectures and demonstrations, in two parts, for the diploma in psychological medicine will be held at the Maudsley Hospital, Denmark Hill, during the first five months of next year. The first part, which covers the first two months and begins on January 6th, comprises the following instruction: twelve lectures on the physiology of the nervous system, by Dr. F. Golla, at 2.30 p.m., on Tuesdays, January 6th and 13th, and at 4 on the remaining Tuesdays in January and February; also at 2.30 on the Fridays in these two months. Four lectures on biochemistry in relation to the nervous system, by Dr. S. A. Mann, at 4 p.m. on Fridays in January, beginning January 9th. Twelve lectures on the anatomy of the nervous system, by Professor Le Gros Clark, at 2.30 p.m. on Wednesdays in January and February, beginning January 7th, and also at 4 on Wednesdays in February. Eight lectures in psychology, by Dr. Henry Devine, at 2.30 p.m. on Thursdays in January and February, beginning January 8th; these will be followed by a course of practical instruction. Six lectures on mental mechanisms, by Dr. Edward Mapother, at 2.30 p.m., on Tuesdays in January and February, beginning January 20th. Four lectures and demonstrations on physiological psychology, by Dr. Golla, at 4 p.m. on Tuesdays and 2.30 on Fridays in February, beginning February 17th. There will also be a concurrent series of clinical lectures on nervous disorders in children, the origin and significance of symptoms, and the neuroses; members of the course may attend these clinical lectures without paying an additional fee; a timetable will be issued later. The second part of the course, covering the months March to May inclusive, will comprise lectures and demonstrations on morbid psychology and psychiatry, by Dr. Edward Mapother; eight lectures on treatment, by Sir Hubert Bond, Dr. Golla, and Dr. J. S. Harris; twelve clinical demonstrations in neurology, by Drs. Golla and James Collier; eight lectures on the psychoneuroses, by Dr. Bernard Hart; two demonstrations on abnormalities of the fundus oculi, by Mr. Foster Moore; four lectures on mental abnormalities of children, by Dr. W. Moodie; six lectures on the practical aspect of mental deficiency, by Dr. F. C. Shrubsall; four lectures on the legal relationships of insanity, by Sir Hubert Bond; six lectures on crime and insanity, by Dr. Norwood East; and demonstrations on laboratory methods and the pathology of the central nervous system. The fee for the whole course is fifteen guineas, or ten guineas for either part separately. Appointments as voluntary clinical assistants

at the Maudsley Hospital are obtainable without fee by practitioners specializing in psychological medicine, and can be held in conjunction with attendance at either part of the course for the diploma. Inquiries about the lectures should be addressed to the director of the Central Pathological Laboratory, Maudsley Hospital, Denmark Hill, S.E.5.

Clinic for Downham Housing Estate.

The London County Council has completed negotiations for the provision of a special clinic building on its new housing estate at Downham in the south-eastern district. The Downham estate now consists of over 6,000 houses. Since 1927 a temporary school treatment centre has been provided here, to serve also the adjoining estate of Bellingham, with over 2,000 houses. Details have now been provisionally agreed for the erection by the Council as housing authority on a site in Downham of a clinic building to be let for use as a school treatment centre for the London Education Service, and sublet for use by the Lewisham Metropolitan Borough Council as a maternity and child welfare centre. The building is to comprise a lecture hall, seating 130 persons, and which can also be used as the main waiting room, also a vision room, with dark room attached, a minor ailments room, cubicles for use in ante-natal cases, a doctors' room, a dispensary, two dental surgeries, and a recovery room, together with all needful accessory accommodation. The estimated cost is £8,135.

Correspondence.

PYREXIA OF UNCERTAIN ORIGIN.

SIR,—Dr. Chalmers's observations on this subject (October 25th, p. 711) seem to be as important and as accurate as his interpretations are shrewd. Cases such as those described by him have been familiar to me since 1917, and seem to constitute one link in experience between those diagnosed, on the one hand, as cases of "influenza" and, on the other, as cases of "poliomyelitis," "polioencephalitis," "encephalitis lethargica," and what not. Such cases made up a very large part of the epidemics of "poliomyelitis" in the United States during the great war: very many such were to be seen in London during the winter of 1917–18, just before, and during, the epidemics which were officially called epidemics of (i) encephalitis lethargica, and (ii) influenza.

It is through the careful observation, in the field, of such cases, that we come to see the almost ludicrous nature of the insistence by systematists on the points of distinction between what they call certain "specific" diseases, each *sui generis*. Dr. Chalmers's cases represent, or stand for, an *abdominal* type of illness in which there is visceral as well as cerebro-spinal disturbance. The type in which the visceral disturbance is thoracic rather than abdominal is, of course, better recognized.—I am, etc.,

London, W.1, Oct. 25th. F. G. CROOKSHANK.

AVERTIN ANAESTHESIA.

SIR,—Tribromethylalcohol, known under the proprietary name of avertin, was introduced as a general anaesthetic having advantages over many others because it could be administered by the rectum. It must be perfectly obvious that, if a general anaesthetic could be administered per rectum with safety and comfort to the patient, it would constitute an enormous advantage to the practitioner of medicine called upon in an emergency to undertake operative procedures. The doctor could administer the anaesthetic, satisfy himself that the patient was properly anaesthetized, and then proceed at his leisure to perform the necessary operation without having to trouble about an anaesthetist; very unfortunately, avertin is not such an anaesthetic.

In your issue of October 18th (p. 663) Sir Francis Shipway says that my paper on avertin at the Winnipeg Meeting of the British Medical Association is sombre and disappointing, and not a true representation of the facts as he sees them. It must remain a misfortune to everyone interested in the subject that Sir Francis was not present at the discussion of the paper so that he might have replied, not only to my views, but to those of other speakers, more particularly Americans, with large and varied experiences of the drug.

Sir Francis Shipway suggests in his letter that avertin anaesthesia may be valuable in combination with other anaesthetics, and in this respect I agree with him; but it is necessary to point out that, if avertin has to be given along with other anaesthetics, the principal object of its use for routine work has disappeared. An anaesthetic which can be given by the rectum is invaluable, but if it has to be given in conjunction with another anaesthetic it ceases to be of primary importance. Even as an adjuvant to other anaesthetics, avertin is now being rapidly superseded—in America and on the Continent, at all events—by sodium amytal and other synthetic drugs. If, as Sir Francis states, "it is premature to draw any comparison between the death rates of ether, chloroform, and avertin," it is also premature to regard avertin, even in combination with local anaesthesia or gas and oxygen, as the ideal anaesthetic.—I am, etc.,

Cambridge, Oct. 25th. F. B. PARSONS.

HYPERTONIC SALINE IN THE TOXAEMIAS OF LATER PREGNANCY.

SIR,—The statement of Drs. Harding and Van Wyck, made four years ago and repeated this summer, that in the toxaemias of pregnancy protein is innocuous and that the salt in the food does the harm (*British Medical Journal*, October 11th, p. 589), is sufficiently interesting. It seems to me a dangerous statement, and should not pass unchallenged. It does not seem proved by the feeding of eclamptics with high protein diet, even though no aggravation of the symptoms, but, on the contrary, improvement, was noted. The patients were admitted after recovery from eclampsia for further observation—that is, after an interval had elapsed between the convulsions and the giving of the protein. During this interval a change of some sort, permitting such feeding—for instance, a restoration of an adequate blood flow through the liver and kidneys—must have occurred.

Even Drs. Harding and Van Wyck—judging from their case of eclampsia reported (Case IV)—do not give their high protein diet immediately after the fits have ceased. They allow an interval to elapse. In this case at least three whole days elapsed; on the day after the outbreak of convulsions water only was given; and on the next two days a "milk diet." Thus, Harding and Van Wyck apparently act on the assumption that immediately after the fits a high protein diet, even though salt-poor, cannot be borne; they must believe that immediately after the fits the viscera are inefficient—a view for which there are many good reasons. After some days, however, they found that such a diet could be tolerated, and indeed might be associated with clinical improvement. But clinical improvement with heavy meals postulates eliminating organs vigorous enough to cope with the absorption of the digestion products; and these authors suggest as much. "Perilobular liver degeneration" in these cases, they say, is "not always present." We can reply that even if it were, provided the blood flowed adequately through the other parts of the lobules, and the cells in these parts were sufficiently numerous and healthy, no bad effects from ingestion of protein would occur. But if the intestinal blood surcharged with such products rushes through the liver, and the liver cannot deal with them—because either too many cells are rendered effete, or the blood rushes through too quickly even for healthy liver cells to catch and thus change these products—a clinical state comparable with that of a dog with an Eck's fistula and fed with meat is produced. That in the latter the associated convulsions are due to an increased absorption of salt will, I think, be difficult to demonstrate.

The patients who had recovered from eclampsia and who were given high protein diet were, moreover, kept in bed. Drs. Harding and Van Wyck point out the highly beneficial effect of rest in bed. So important do they regard this, with the general attention to hygiene, that they say they cannot legitimately ascribe the

improvement to the protein or fat in the diet. Rest in bed can only act by reducing the work of the viscera and in facilitating that work. The tone of all the muscles is reduced, and the blood flow through the viscera rendered less difficult. The abnormal distribution and retention of water—the phenomenon associated with the toxaemia of pregnancy on which Drs. Harding and Van Wyck lay the most stress, and which is only explained by a visceral impediment—tend to pass away with rest in bed, because rest in bed markedly and especially affects the circulatory mechanism, facilitating the visceral work by removing to some extent the hindrance to the blood flow through visceral capillaries.

There is another factor of moment—the state of the child. As long as the child is intrauterine and alive, the portal blood flow, to meet the foetal demands, must continue increased compared with the non-pregnant state; and as the child develops so must this portal blood flow progressively increase to meet these growing demands. If the child dies *in utero*, this increased demand on the portal blood flow (the source of nutrition) and the associated increment of hepatic work immediately stop. If the uterus is emptied the same result occurs. If the toxaemia of pregnancy is due to maternal viscera having become impaired (as a result of the pregnancy), it is not surprising that with foetal death or emptying the uterus maternal improvement should occur; if in pre-eclampsia the patient be fed well and foetal death should occur, a maternal improvement should not astonish us. In this respect it is interesting to find that in their 1926 paper[1] Drs. Harding and Van Wyck, speaking of their high protein feeding, say: "The results are undoubtedly beneficial to the mother, though the child does not always escape death." That the eclamptic woman in whom labour rapidly supervened (Case IV) should have been "feeling well" and perhaps feeding well on the fourth day is not very remarkable.

Drs. Harding and Van Wyck's main contention that the taking of salt with food in a developing toxaemia will make the patient worse, and even produce eclampsia, is doubtless sound; but it only shows that the primary change in the toxaemia of pregnancy is a visceral change. Thinking to dehydrate the oedematous patient or the one whose weight had unduly increased, they tried the effect of injecting intravenously hypertonic saline. But this can only dehydrate the patient if the kidneys be efficient. The kidneys are the especial organs concerned in this mechanism. If the kidneys are sufficiently obstructed, such an injection can only have as its effect an increase in the volume of the blood and a rise in blood pressure. Thus, in a case of normal pregnancy, these authors found no rise in blood pressure and no albuminuria: the patient simply complained of thirst and passed two fluid stools. In a patient with a mild toxaemia, the blood pressure fell and the albuminuria decreased, but the patient felt sick and had headache and was given milk diet for three days. In the third case, also one of "mild toxaemia," the blood pressure rose, the albuminuria increased, and the patient vomited. She was given milk diet for three days when labour supervened. The fourth case, a primigravida, "admitted one convulsion" with marked albuminuria, was injected ten days later, the blood pressure rising and the albuminuria increasing. The very next day she was injected again. The blood pressure rose greatly; headache and epigastric pain appeared, and the patient vomited, apparently several times. In the evening convulsions appeared and labour.

If Drs. Harding and Van Wyck's interpretation of their facts is sound, some sign indicative of a toxaemic state should have been induced in the case of normal pregnancy—a primigravida, eight months pregnant—by injecting hypertonic saline. It did not do so. The evidence on their facts thus is that salt *per se* is not the cause of the toxaemia of pregnancy; it does not induce it, though it may increase it. Inquiry may show that during the war the food in Germany was prepared with more salt than usual. On the other hand, it does not seem that food *per se* is the cause of this disease. Many women, as Whitridge Williams has pointed out, eat largely when pregnant, and the only effect is a large child. He makes no note that these individuals restrict their salt; but he emphasizes that many of them lead idle or easy lives.

The more one reflects on this matter and examines it, testing it in the light of new observations, the more certain does one become that the toxaemia of pregnancy has a physical basis. It is activity which produces this disease and eclampsia—acting, as I have urged, by obstructing the blood flow through the viscera. Just in so far as food is necessary for general activity, and is taken for this, does it come into play. The relative starvation of the German women during the war produced a weakness which has been commented on, and which itself explains the fall in the incidence of eclampsia among them. The teaching that the pre-eclamptic woman—often remarkable for her physique and obvious strength—should be starved, promulgated by many noted obstetricians and especially of the Dublin school, weakening her as it does (and as do morphine, chloroform, and bleeding in eclampsia), must be considered sound, and the only safe course to adopt.—I am, etc.,

Rugby, Oct. 16th. R. H. Paramore, F.R.C.S.Eng.

[1] Diet in the Treatment of Pre-eclampsia. *Journ. Obstet. and Gyn. Brit. Emp.*, 1926, xxxiii, 17.

PERSONNEL OF A RADIUM CLINIC.

Sir,—From Mr. Fitzwilliams's letter in the *Journal* of October 11th (p. 621), some of your readers may have drawn the conclusion that surgeons have made a thorough trial of *x*-ray treatment in cancer, and that the results of these detailed and extensive observations "have been disappointing to surgeons." This is far from being the case.

Dr. Russell Green has shown (October 25th, p. 710) that there is statistical evidence strongly supporting the combined use of *x* rays and radium in cervix cancer, and the combined use of *x* rays and operation in breast cancer. But—for example, in the case of breast cancer—there are as yet available very few observations which tend to show the relative value of operation as compared with *x* rays or radium, or a combination of the two; in point of fact, the thorough trial of radiation methods in surgical (apart from skin or gynaecological) cancer implied in Mr. Fitzwilliams's disparaging reference to *x* rays has nowhere yet taken place.

Surgery and radiation are both local methods of treatment. As such they are likely to be most beneficial when applied to patients with early localized growths; I have shown this in respect of operable breast cancer when treated with *x* rays or surface radium.[1] Since surgeons hardly ever send on to the radiologist early cases of cancer for *x*-ray or surface radium treatment, but as a rule the inoperable or recurrent patients, the only way in which these methods can be truly evaluated is for the patients to have access directly to the radiologist (radiotherapist). This is customary in some centres, such as Stockholm, where radiology has won for itself an autonomous position. In Great Britain, however, it is possible only where the radiologist has beds of his own, as is the case at the Middlesex Hospital, where the generosity of an anonymous donor has allowed six beds to be set aside for the non-operative treatment of cancer; the special intention of this benefaction is that early cases where there is a wish to avoid operation, or there is a contraindication to operation, will be able to have purely radiological treatment, by *x* rays or by surface radium, or by both combined.—I am, etc.,

London, W.1, Oct. 25th. J. H. Douglas Webster.

IONIZATION FOR COLITIS.

Sir,—I have been much interested to read in your issue of October 18th the article by Dr. Julius Burnford on the treatment of ulcerative colitis by ionization. As long ago as November 4th, 1905, I published a letter in the *Lancet* on the treatment of a single case of colitis by ionization, and in the *Lancet* of April 22nd, 1911, a paper of mine on further cases was published, dealing fully with the question of technique, results, etc. Dr. Burnford's results confirm my own experiences, and I have seen no reason to alter the technique which I described in 1911.

[1] *Lancet*, 1926, i, 431; 1928, ii, p. 62.

I merely write this letter to congratulate Dr. Burnford on developing a treatment which I believe I was the first to describe twenty-five years, and subsequently nineteen years, ago. It has always appeared to be difficult to understand why the ionization treatment of both mucous and ulcerative colitis has not been adopted as part of the routine therapy of this disease.—I am, etc.,

Cheltenham, Oct. 22nd. J. CURTIS WEBB.

ANAESTHESIA FOR THROAT OPERATIONS.

SIR,—I, too, am interested in the recent correspondence on anaesthesia for throat operations, for in 1923 I was adopting almost the same procedure as recommended by your correspondents for anaesthetizing patients for dissection of tonsils.

Using a Boyle's apparatus—after a preliminary injection of morphine and atropine—I induced with gas and oxygen, supplemented with ether or a mixture of ether and chloroform as required; as soon as the patient was fully anaesthetized, I passed a soft, fairly large-bored rubber catheter through the nose into the trachea, and continued the anaesthetic with the same apparatus. The surgeon's dresser followed the knife with a fine tube attached to a suction apparatus, so there was never any bleeding into the mouth or throat. With the correct mixture the method was automatic; the patient's colour remained healthy, the respirations, as shown by the rise and fall of the bag, were quiet and regular. These operations were always performed in a darkened theatre, except for the light of the surgeon's head-lamp.

I have always considered the method ideal for many dental operations, but I have never had the opportunity of using it in this field of work. The usual advantages of gas and oxygen—quick recovery and no after-symptoms—were the rule.—I am, etc.,

WRIGHT LAMBERT, M.R.C.S., L.D.S.

Brentwood, Essex, Oct. 25th.

MEMBERS OF THE ROYAL COLLEGE OF SURGEONS.

SIR,—A resolution advocating some representation of the Members on the Council of the Royal College of Surgeons of England has been passed by large majorities at forty-one consecutive annual meetings of Fellows and Members. On November 21st, 1929, a resolution of this character was passed almost unanimously, and the Council replied:

"No evidence has been submitted to the Council that the change in the constitution of the College advocated in the resolution is desired by any considerable number of the Members of the College, and the Council is therefore not prepared to reopen the question at present."

In order to elicit their desires a poll of Members resident in the United Kingdom and the Irish Free State is being taken by the Society of Members. Lack of financial support prohibits a total poll. Some 12,500 cards have been issued and nearly 7,000 replies received. May I ask all those who have not returned their cards to do so promptly, since it will be necessary to close the poll on or about November 7th. These should be sent to Dr. Pinto Leite, 25, Fellows Road, London, N.W.3. It is hoped that all Members will respond, and thus show an interest in their College and afford to the Council the evidence desired.—I am, etc.,

ERNEST E. WARE,

London, W.1, Oct. 27th. President of the Society of Members.

TRAINING OF PUBLIC HEALTH WORKERS.

SIR,—The leader on the training of public health workers in your issue of October 18th appears to me to require in the last paragraph a considerable amount of explanation. Whilst the whole world appears to be unanimous in the opinion that examinations are a very poor means of discovering ability, it is so far the only practicable method, except lengthy and perhaps disastrous trial. This being so, I fail to understand the writer's point when he says that posts as sanitary inspectors should be open to men and women who, though of good education, cannot pass examinations. Who is to assure the engaging authorities that a man who cannot pass an examination is in fact of good education? Good education in the required subjects is not apparent except upon long and intimate acquaintanceship. A sanitary inspectorship is no longer considered an admirable post for the mayor's gardener or coachman.

In my opinion, so far from it being good business to lower the educational standard of sanitary inspectors, it should be the aim of the governing authorities to raise it considerably. With every day that passes a sanitary inspector's work is rapidly becoming a work which demands a more scientific training, and the standard which should be aimed at should be the possession of the B.Sc. of recognized universities covering the necessary subjects. This would necessarily imply a good general elementary education. If you weaken one stone of the edifice of public health, as it is shaping to-day you weaken the whole structure, and the sanitary inspector's work, dealing with questions of food, housing, water supply, and infectious diseases, is the foundation of all public health work. The better that foundation, the better the building.—I am, etc.,

V. F. SOOTHILL,

Norwich, Oct. 24th. Medical Officer of Health and School Medical Officer.

WORKERS' HEALTH EDUCATION.

SIR,—The *British Medical Journal* of October 18th publishes five original articles on health training, and the first is by Professor J. G. Fitzgerald of Toronto, who includes under health workers, "university graduates in medicine, arts, science, engineering, agriculture, public health nursing, social science, and those who have received training in the duties of a sanitary inspector." Professor Fitzgerald and your editorial rightly emphasize the importance of this vocational aspect of modern health training. May I, as a past public hospital and health officer, stress the even greater importance of mass health training of the minds of the workers? Without an educated people, health workers cannot apply efficiently a thousandth part of what is known of hygiene, and medical science generally, to personal and communal health. One attractive method I have seen on the Continent and in the Soviet Union of obtaining the interest of apathetic workers is that of free daily demonstrations to the public, in health museums, by experts of all branches of preventive and social medicine, supplemented by exhibits, etc. The socialist workers' health movement, of which I enclose a circular, aims at interesting the workers personally in their own health until a health conscience and reasonable knowledge is common property.—I am, etc.,

F. G. BUSHNELL,

Honorary Organizing Secretary, Plymouth

October 20th. Workers' Health Committee.

NECROPSIES BY GENERAL PRACTITIONERS.

SIR,—Some years ago a Manchester coroner, on taking office, decided to ask the practitioner in charge of the case under investigation to perform the post-mortem examination. This practice was carried out for a few months. In a busy practice at the time, I must say I did not welcome the prospect of these necropsies, chiefly because of the short notice that had to be given to the practitioner. To perform my first post-mortem for the coroner I had to drag myself out of bed before 7 a.m. in order that the evidence should be in his hands before 10 a.m. My last post-mortem was held one Sunday at midnight in a draughty ill-lit police mortuary, with temperature well below freezing point. I was not altogether ill pleased when I learnt that it had come to the ears of the coroner that one general practitioner, who had sent in a full report of his necropsy, including a dissection of the brain, had performed the whole operation with his pocket knife! The coroner discontinued the practice, and selected a rota of young specialists.—I am, etc.,

Manchester, Oct. 22nd. ALEX. FRASER.

PHYSIOLOGICAL RESEARCH AND CLINICAL MEDICINE.

SIR,—In your issue of October 11th Lord Moynihan rebukes physiologists for making journeys into countries far from the realm of clinical medicine; in particular, he holds them blameworthy for having failed to bring any help to the treatment of Raynaud's disease and other allied conditions. Since in acetyl choline the physiologists have only recently brought back from that same "far country" the very remedy for which Lord Moynihan asks, the reproach appears to be untimely, to say the least. It is difficult to foretell of even the most academic piece of physiological research that it may not in the long run become as "hominal" as even Lord Moynihan could wish.—I am, etc.,

Wolverhampton, Oct. 24th. S. C. DYKE.

STAFFING OF MATERNITY AND INFANT WELFARE CENTRES.

SIR,—In to-day's issue of the *British Medical Journal* the maternity and child welfare committee of the city of Birmingham invites applications from medical women for the post of assistant medical officer for maternity and child welfare. The appointment will automatically terminate in the event of the medical officer's marriage. If this condition is made consistently the medical direction of maternity and infant welfare will be confined to men, spinsters, and unmarried mothers. Is it advantageous that married mothers should be excluded from maternity and infant welfare work?—I am, etc.,

Birmingham, Oct. 25th. CRANSTON WALKER.

Obituary.

THE LATE DR. E. D. WHITEHEAD REID.

SIR CHARLES GORDON-WATSON writes:

The tragic death of Whitehead Reid at the early age of 47 is a terrible blow to a very wide circle of devoted friends. It was my good fortune to teach Reid as a student, to serve with him in France, to be associated with him from time to time in surgical practice, and to claim him as a friend.

He succeeded his father in general practice in Canterbury. Had he chosen, he might have made a big mark in surgery. He gave to general practice exceptional ability, intense enthusiasm, and an amazing capacity for work. In all branches of his work he kept right up to date, and found time to study at the fountain head new lines of treatment. Recently he had made an intensive study of radium therapy, and had obtained a gift of radium for his hospital. Whatever Reid undertook to do he did thoroughly. His clinical notes on cases were a joy to the consultant. No likely line of investigation was omitted or unrecorded, though his time was too seldom his own. As a surgeon he was in great demand over a wide area, and his attractive and modest personality made him beloved wherever he went. Despite a busy practice and numerous public appointments, he found time to master the technique of radiography and electrotherapy, and to lecture regularly to the St. John Ambulance Brigade.

Reid had a fine athletic figure, and was a good all-round athlete. At Tonbridge School he shot in the Bisley eight. At Cambridge he was secretary of Christ's Athletic Club. He rowed in the College eight, and as a sculler was noted for his style. Though he just failed to get a blue, he was a beautiful high jumper, and often competed in high jump, hurdles, and sprints at the London Athletic Club, where he won many prizes. At Bart's his enthusiastic efforts as secretary (and later as captain) of the athletic club brought the shield back to the hospital in 1908. In 1919, after four years' war service abroad, Reid took up flying, and was quick to realize the importance of civil aviation, and the value of civil pilots as auxiliaries to the Air Force. He was a pioneer in private ownership, and was known to everybody in aviation. He became an expert pilot, and as flight lieutenant to a London bombing squadron trained annually with the Air Force, and took part in bombing raids on London. Recently he had become a gliding enthusiast, and was returning from a gliding exhibition when he met his death.

Reid's energetic and crowded life, which came to a tragic end on Trafalgar Day, stands out at a time when enterprise and effort are too often lacking and Nelson's famous signal is seldom remembered. A master pilot may meet misfortune in the air. Those who knew Reid's record in the air, and knew the man, know well that no lack of foresight, no want of skill or care, contributed to the cruel crash that closed the young life of his passenger and cut short his own versatile career. The sun shone its brightest as Douglas Reid passed to his rest, escorted by his brother officers of the Royal Air Force, and followed, between the rows of respectful citizens, by some two thousand friends who had filled the cathedral to the full to pay a tribute to his memory. A last tribute, a last post, that could not fail to soften a widow's grief.

We have just received news of the death of ALFRED WITHERS GREEN, M.R.C.S., L.R.C.P., at Hobart, on the eve of his seventy-seventh birthday. He had suffered about Christmas time last year from coronary thrombosis, since when he had lived more quietly, and was not troubled. The son of Mr. Abbott Green, at one time Inspector-General of Hospitals, Bengal, he was born at Dacca, and came to England as an infant before the Suez Canal was completed. Educated at Bedford Grammar School, where he excelled at Rugby football and cricket, he went on to Guy's Hospital, but had to begin practice in 1876 before completing his M.B., B.S. For over forty years he conducted a busy practice in the City of London, and experienced the changes that occurred as London expanded and the city became non-residential. In early years his leisure time was spent in connexion with the London Medical Mission, and to medical missionaries he was always ready to offer hospitality and assistance. Dr. Withers Green did valuable work for the Poor Law Medical Officers' Association, and on committees in connexion with the Insurance Act. For several years prior to the war he would conduct parties round the haunts in the City of Dr. Samuel Johnson, Goldsmith, and Garrick, and thereby formed a wide circle of friends both in and out of the profession. In 1915, when London hospitals were depleted of their staff on active service, he took up anaesthetics and ably assisted them. Not until after the war did he retire and join one of his sons in Tasmania.

With the death, on October 26th, of Dr. FREDERICK WILLIAM SPURGIN, in his ninety-fourth year, London has lost its oldest medical practitioner. Born at Harlow, Essex, in 1837, he was educated at the Mercers' School, after leaving which he was apprenticed, as was then the custom, to his uncle, Dr. Charles Spurgin, a practitioner of great repute in East Anglia, and a close friend of Sir Astley Cooper. Frederick Spurgin entered the Middlesex Hospital, and, after a brilliant career as a student, during which he carried off most of the prizes, he obtained the diplomas L.S.A. and M.R.C.S. in 1861, adding later the L.R.C.P. of Edinburgh. He served as resident surgeon (now house-surgeon) at the Middlesex Hospital, and was then appointed resident casualty surgeon at the Poplar Hospital, where his skill in surgery was much appreciated. Commencing private practice in Hammersmith, he rapidly built up a successful practice. He removed to Henrietta Street, Cavendish Square, in 1869, when he purchased succession to an old-established practice, and so began his long association with Marylebone. He was appointed divisional surgeon to the local police, and held the position for forty-seven years—a record in police service. With numerous appointments and a large and busy private practice, Dr. Spurgin was for sixty years one of the best-known practitioners in the West End. He was a witness in his time in many well-known cases, including those known as the Harley Street mystery in 1880 and the George Street murder in 1888. When about to retire from active practice in 1914, the great war and his son's absence on military duties caused him to continue in harness until 1919. Active and vigorous to within a few months of his death, Dr. Spurgin was a well-known

figure in Marylebone, and his passing will leave many regrets among the older inhabitants, by whom he was much respected and loved. He was endowed with very sound judgement and a keen diagnostic sense, and his opinion was much valued by his colleagues. He was a celebrated angler and a zealous Freemason, being by some years the oldest member of his lodge, which he joined in 1869. Of his family of five children a daughter and a son survive him; the latter is still carrying on the practice established more than a century ago.

Medical Notes in Parliament.

Opening of New Session.

A new session of Parliament was opened by the King on October 28th. The Speech from the Throne announced that bills will be submitted for raising the age of compulsory school attendance, for modifying and extending the law relating to town-planning and the preservation of rural amenities, and for the amendment and consolidation of the Factory Acts. Other important bills were also promised. The House of Commons began the debate on the Address, which will continue next week.

Universities and Colleges.

UNIVERSITY OF LONDON.

Four lectures on the respiratory functions of the blood will be given by Dr. L. E. Bayliss at University College, Gower Street, W.C., on November 10th, 17th, 24th, and December 1st, at 5 p.m. Dr. W. Robson will give a course of four lectures on protein metabolism at King's College, Strand, W.C., on November 13th, 20th, 27th, and December 4th, at 5 p.m. Admission to the lectures is free, without ticket.

The Graham scholarship in pathology has been awarded for two years to C. L. Oakley, M.B., B.S., on the recommendation of the School Committee of University College Hospital Medical School.

UNIVERSITY OF ABERDEEN.

Dr. William G. Evans, senior resident medical officer, Mount Vernon Hospital for Cancer, Northwood, has been appointed McRobert lecturer in malignant disease and radium officer at the Aberdeen Royal Infirmary.

UNIVERSITY OF EDINBURGH.

On the occasion of his installation as Chancellor, Sir James Barrie delivered a characteristic address to the students and conferred honorary and other degrees, as well as diplomas, upon the successful candidates. The Diploma in Public Health was conferred upon the following:

Katharine H. Aitchison, J. M. Davidson, Martha Keith, R. J. A. Lavoipierre, D. Lees, I. F. Macleod, Barbara K. Nicholson, Jean Sutherland, Helen A. Wright.

UNIVERSITY OF BOMBAY.

Dr. Abraham S. Erulkar, honorary physician to King Edward Memorial Hospital, Bombay, has been elected dean of the Medical Faculty of Bombay University.

The Services.

HONORARY PHYSICIANS TO THE KING.

Colonel G. L. Thornton, *M.C.*, T.A. (A.D.M.S., 43rd Wessex Division) and Lieut.-Colonel (temporary Colonel) W. P. MacArthur, D.S.O., R.A.M.C., promoted to Brevet Colonel, have been appointed honorary physicians to the King in the place of Colonel A. B. Soltau, T.D., deceased, and Lieut.-Colonel (Brevet Colonel) E. Ryan, C.M.G., D.S.O., R.A.M.C. (retired).

No. 14 STATIONARY HOSPITAL.

The eleventh annual dinner of the medical officers of No. 14 Stationary Hospital will be held on Friday, December 12th, at the Trocadero Restaurant, Piccadilly, at 7.15 for 7.45 p.m. Colonel C. R. Evans, D.S.O., will be in the chair. The price of the dinner will be 15s. (exclusive of wines). Dr. H. Letheby Tidy, 39, Devonshire Place, W.1, is again acting as honorary secretary.

DEATHS IN THE SERVICES.

Lieut.-Colonel Arthur Samuel Arthur, O.B.E., R.A.M.C. (ret.), died at Blackhall Wood, Carlisle, on September 9th, aged 53. He was born on March 16th, 1877, and was educated at the Newcastle School of Medicine, graduating as M.B. and B.S. of Durham University in 1898. He served as a civil surgeon in the South African war for over two years, and was for some time in charge of the native refugee depot in the Orange River Colony. He entered the R.A.M.C. as lieutenant on January 30th, 1904, becoming major on July 1st, 1915, and retired on account of ill-health, with a step of promotion, on May 23rd, 1921.

Lieut.-Colonel Hugh Watts, I.M.S. (ret.), died in June last, aged 50. He was born on September 18th, 1879, was educated at St. George's and Guy's, and took the M.R.C.S. and L.R.C.P.Lond. in 1903, also graduating in the same year as M.B. and B.S.Lond. After serving as resident obstetric surgeon and assistant house-surgeon at Guy's Hospital, and as clinical assistant at the Evelina Hospital for Sick Children, he entered the I.M.S. as lieutenant on January 30th, 1904, became lieutenant-colonel on July 30th, 1923, and retired on May 10th, 1928. When he entered the Service he gained the Montefiore prize and medal for military surgery at the Army Medical School.

Medical News.

The Lloyd Roberts Lecture at Manchester University will be delivered on Friday, November 7th, at 4.15 p.m., by the Right Rev. E. W. Barnes, D.D., Bishop of Birmingham; the subject will be heredity and predestination.

"Science and modern industry" is the subject of the Norman Lockyer Lecture, 1930, which will be given by Professor Sir William Pope, D.Sc., F.R.S., in the Goldsmiths' Hall, Foster Lane, E.C., on Thursday, November 13th, at 4.30 p.m. The Rt. Hon. Sir Samuel Hoare, Bart., President of the British Science Guild, will take the chair at the lecture, for admission to which there will be no charge. Tickets may be obtained on application to the British Science Guild, 6, John Street, Adelphi, London, W.C.2.

At a meeting of the Pharmaceutical Society of Great Britain, to be held in the lecture theatre at 17, Bloomsbury Square, W.C., on Tuesday, November 18th, at 8.30 p.m., a lecture will be given by Mr. Wilfred H. Linnell, Ph.D., M.Sc., on the purity, standards, and tests of medicinal substances. Scientific friends of members will be welcomed.

At a meeting of the Royal Sanitary Institute on Saturday, November 15th, a demonstration will be given at the Field Laboratories, Milton Road, Cambridge, on recent research in connexion with animal tuberculosis, by Professor J. Basil Buxton, and the staff of the Department of Animal Pathology of the University of Cambridge. The chair will be taken at 10.30 a.m. by Dr. James Fenton.

The Fellowship of Medicine announces that the following two lectures for the M.R.C.P. course will be given at 8.30 p.m. at the Medical Society, 11, Chandos Street, Cavendish Square: on November 4th Dr. Maurice Cassidy will speak on auricular fibrillation, and on November 7th Dr. O. L. V. de Wesselow will discuss uraemia. Tickets may be obtained at the lecture room. On Monday, November 3rd, a free lecture will be delivered at 4 p.m. by Dr. B. T. Parsons-Smith on recent advances in the diagnosis and treatment of coronary thrombosis. A course of free lecture-demonstrations on diseases of infancy and childhood will be given at St. John's Hospital, Lewisham, by Dr. J. Gibbons on Monday afternoons at 4.30, commencing on November 3rd and continuing at fortnightly intervals thereafter until February 16th. Free clinical demonstrations will be given during the week as follows: at St. John's Hospital, Leicester Square, on November 3rd, at 2 p.m., by Dr. W. Griffith; at the Metropolitan Hospital, Kingsland Road, E., on November 4th, at 2 p.m., by Dr. J. W. Linnell and by Mr. R. J. McNeill Love. The subjects of special courses in November are as follows: venereal disease (November 3rd to 29th), medicine, surgery, and gynaecology (November 10th to 29th), neurology (November 17th to December 13th), proctology (November 24th to 29th), ante-natal (November 5th, 12th, 19th, 26th), and diseases of the chest (November 17th to 29th). Syllabuses and tickets for all courses may be obtained from the secretary of the Fellowship, 1, Wimpole Street, W.1.

Dr. F. E. Fremantle, M.P., and Dr. Marion Phillips, M.P., have been appointed members of the committee set up by the Minister of Health and Secretary of State for Scotland to inquire into and report upon the present working of the Rent Restriction Acts (excluding the special provisions relating to agricultural cottages), and whether any modifications or amendments should be made to them.

THE post-graduate courses at the Royal Northern Hospital, Holloway Road, N.9, will be resumed on Tuesday, November 4th, at 3.15 p.m., when Mr. L. E. Barrington-Ward will give a demonstration of surgical cases. The course will be continued till December 16th, when there will be a break for the Christmas vacation, and will recommence on January 20th, 1931, and continue weekly till March 17th. From Monday, December 1st, till Friday, December 5th, an intensive course will be held daily. The lectures and demonstrations are open to all practitioners free of charge. Full particulars can be obtained on application to Dr. E. G. B. Calvert at the hospital.

THE Minister of Health received a deputation on October 24th from the Standing Joint Committee of the National Women's Organization. The deputation was introduced by Dr. Marion Phillips, M.P., and urged the importance of early steps being taken by the Government to set up a national maternity service, stressing the desirability of full control of such a service by the health authorities. The Minister said in reply that he proposed to approach local authorities immediately and urge upon them the importance of an improvement and extension of their present maternity services. He also said that he intended to discuss with the local and other authorities affected, including the doctors and those concerned with health insurance, the question of a national scheme, but it had to be realized that these discussions would inevitably take time.

THE Nursing Sisters of St. John have recently set aside their home at Deptford for the establishment of a specialized maternity centre, from which midwives attend mothers in their own homes, act as maternity nurses under local medical men, and train students in practical midwifery. Ante-natal and post-natal clinics are held regularly with an obstetric consultant in attendance. A group, representative of the medical profession, midwives, and friends, were present on October 25th, when the Bishop of Woolwich visited this centre for the purpose of dedicating a new altar which had been given for the chapel, in memory of Sir Francis Champneys, whose great work for midwives is so widely known.

THE annual St. Luke's Day service arranged by the Portsmouth Division of the British Medical Association was held on October 17th, in All Saints' Church, Landport, the lessons being read by two members of the medical profession. The Bishop of Portsmouth delivered an address in which he emphasized the importance of character in connexion with the ministration of the sick. The St. Luke's Day service, he said, was a recognition of the contact between the creative healing force and the practical activities of the medical servants of God.

HEALTH week was observed in Port-of-Spain, Trinidad, from October 11th to 18th. The Governor opened an exhibition illustrating the nutritive values of various kinds of food; the production of clean milk; the rearing of healthy children; and the campaigns against malaria, tuberculosis, enteric fever, and other diseases. Dr. G. H. Masson, medical officer of health, delivered an address in which he commented on the remarkable decline in recent years in tuberculosis and enteric fever. He appealed for the establishment of a permanent health and hygiene museum.

A CONFERENCE on Mental Welfare will be held in the Great Hall of the British Medical Association House, Tavistock Square, W.C., on Thursday, Friday, and Saturday, December 11th, 12th, and 13th. An opening address will be given by the Right Hon. Arthur Greenwood, M.P., Minister of Health, and subjects for discussion will include matters relating to the Mental Treatment Act, the Mental Deficiency Acts, and school reorganization in connexion with the education of defective or retarded children. Further information may be obtained from the secretary, Central Association for Mental Welfare, 24, Buckingham Palace Road, S.W.1.

THE third International Congress of Radiology will be held in Paris at the end of July, 1931, the sections being roentgen-diagnosis, roentgen- and curie-therapy, radio-biology, radio-physics, natural and artificial heliotherapy, and medical electrology.

THE second Congress of the Federation of the Latin Medical Press was recently held at Brussels under the presidency of Professor Maurice Loeper of Paris, on the occasion of the celebration of the centenary of the independence of Belgium.

THE report of the Queen Alexandra Sanatorium Fund for the year 1929–30 shows that the number of grants allotted to assist patients receiving treatment for tuberculosis at Davos was forty-four, a decrease of nine on the exceptional total in the previous year. Of the patients so assisted, eleven resided in sanatoriums, thirty-one in small hotels or pensions, and two in private families. Grants were paid at the rate of £2 a week, and the average stay during the year was twenty-two weeks. Further information can be obtained from the honorary secretary of the Fund, Mr. D. Vesey, 97, Warwick Road, Earl's Court, S.W.5.

ACCORDING to the *Canadian Colonizer*, published by the Canadian National Railways, a new plan of co-operative health services is being operated in the Province of Saskatchewan under Provincial Government direction. About three-quarters of the population of Saskatchewan is rural, and not a small proportion live in outlying districts. The problem of bringing health services to these people is a considerable one. Recently the Government by legislation made provision whereby communities could obtain the services of doctors under a co-operative plan. One scheme empowers a rural municipality to make a grant to a medical practitioner as an inducement to him to take up his residence and practise his profession in the community, a grant of money up to $1,500 being made to him for this purpose. The other plan is that which makes it possible for rural municipalities, by vote of the residents of the area, to engage a full-time practitioner at a salary not exceeding $5,000 yearly. In this case the doctor acts as the community doctor, giving free medical service to all ratepayers and their families. Thirteen municipalities are trying out the first scheme and nineteen districts the second.

WE have received the first part of *Fisiologia e Patologia della pelle*, which contains five papers on various aspects of dermatology read before the second medical congress of S. Pellegrino on June 29th and 30th by Professors C. Foà, A. Valenti, M. Truffi, M. Ascoli, and L. Devoto respectively.

A CANCER institute, consisting of a laboratory and a hospital of 40 beds, has recently been founded at Tokyo.

PROFESSORS HENRI FRÉDÉRICQ of Liège and J. Varnieuwe of Ghent have been nominated members of the Royal Academy of Medicine of Belgium.

DR. FÜLLEBORN has succeeded Professor Nocht as director of the Institute for Tropical Diseases at Hamburg.

Letters, Notes, and Answers.

All communications in regard to editorial business should be addressed to ***The EDITOR, British Medical Journal, British Medical Association House, Tavistock Square, W.C.1.***

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

Authors desiring REPRINTS of their articles published in the *British Medical Journal* must communicate with the Financial Secretary and Business Manager, British Medical Association House, Tavistock Square, W.C.1, on receipt of proofs.

All communications with reference to ADVERTISEMENTS, as well as orders for copies of the *Journal*, should be addressed to the Financial Secretary and Business Manager.

The ***TELEPHONE NUMBERS*** of the British Medical Association and the *British Medical Journal* are ***MUSEUM 9861, 9862, 9863,*** and *9864* (internal exchange, four lines).

The ***TELEGRAPHIC ADDRESSES*** are:

EDITOR OF THE *BRITISH MEDICAL JOURNAL*, *Aitiology Westcent, London.*

FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate Westcent, London.*

MEDICAL SECRETARY, *Mediocra Westcent, London.*

The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin*; telephone: 62550 Dublin), and of the Scottish Office, 7, Drumsheugh Gardens, Edinburgh (telegrams: *Associate, Edinburgh*; telephone 24361 Edinburgh).

QUERIES AND ANSWERS.

ADMINISTRATION OF MALE FERN.

"C. W. B." would be glad of suggestions for the best mode of administration of male-fern to a child of 3 years.

PREMATURE GREYNESS.

"G. E. McC." asks for advice on the treatment of a girl of 22 years whose hair for some years has gradually turned quite grey. Formerly it was jet black. Her mother had a similar experience.

CONSTIPATION IN A CHILD.

"K. A." writes: I should be glad of suggestions for the treatment of constipation in a boy of 6 years. He is an active child, always on the go, an irrepressible chatterbox, and sometimes has restless nights. The condition has been present since birth, and tends to become more troublesome. All the usual methods have been followed—that is, inculcation of a regular habit and the eating of fruit and vegetables. In addition, daily doses of paraffin or petrolagar have been necessary, and latterly occasional doses of cascara evacuant or other aperient. The child never passes a motion without some such artificial aid, and has occasionally missed two or three days, even when taking them.

EPONYMY.

"J. G. B." asks what is the technical expression for naming a disease after the person who first describes it—for example, Bright's disease?

*** The *Concise Oxford Dictionary* defines "eponym" as "one who gives his name to a people, place, or institution. So 'eponymous.'" In the *New English Dictionary*, under examples of the use of the word "eponymy," we find—"The tendency of rude races to eponymy," and again, "after the fashion of eponymy so prevalent among Asiatic nomads." It appears, therefore, that the troublesome practice of calling symptoms and diseases after people's surnames should be described as "eponymy." A longer, but perhaps more exact, term would be "eponymous nomenclature."

ALUMINIUM COOKING VESSELS.

"L. S." writes in reply to the query under this heading published on October 11th (p. 626): "W. S. M.'s" belief that sodium bicarbonate has a bad influence on aluminium utensils is correct. It should, however, be kept in mind that aluminium cooking utensils are invariably cleaned with soda or a material containing soda, such as soap, special cleaning powders, etc., and that that is at least as bad as the shocking habit of adding sodium bicarbonate in the process of cooking in aluminium utensils. On buying vessels made of aluminium the public is sometimes told not to have them cleaned with soda, but is invited to use a "special" soap. It seems obvious, however, that this, too, contains soda.

INCOME TAX.

Removal to other Premises.

"W. A. J." "removed from a smaller house into the house of a neighbouring practitioner, which had fallen vacant." His claim to deduct as a professional expense the cost (£40) of repairing and redecorating the professional part of the new premises has been refused.

*** A similar question was discussed in the case of the Granite Supply Association, Ltd., *v.* Kitton, and it was held that the expense of removing to more commodious premises is not deductible. The expenses in question seem to have arisen out of the removal, and therefore to fall within that ruling. Possibly the inspector of taxes may feel able to allow—the equitable grounds are strong—an amount equal to the cost of redecorating the professional portion of the *old* premises, after making a reasonable allowance for any further "life" in those decorations.

Double Assessment.

"SCOTEX" has received a notice of assessment, showing him to be charged on £67 under Schedule E and £119 under Schedule D—in fact, his earnings have been £52 from practice and £67 as locumtenent.

*** It seems clear that an error has been made and that the £67 has been assessed twice—that is, as a separate amount and also as part of the £119 assessed under Schedule D. If "Scotex" writes to the inspector of taxes whose address is given on the notice no doubt the assessment will be amended. On the facts he is not yet liable to payment of tax.

LETTERS, NOTES, ETC.

PYLORIC CANCER: REMISSION OF SYMPTOMS.

DR. H. LAWRIE (Ramsbottom) writes: With further reference to the question of "Wicklow" (September 13th, p. 455), the following case may be of interest. An unmarried woman, now aged 70, consulted me early in 1924 about epigastric pain coming on one to two hours after meals and relieved by food; duodenal spasm and possibly ulcer were suspected. In the middle of March that year five or six nodules, the largest about the size of a large horse bean, were detected in the angle between the left clavicle and sterno-mastoid tendon. These were not painful, but hard and well anchored in the surrounding tissues, and were strongly suggestive of lymphatic gland infection by malignant disease elsewhere. The gastric symptoms pointed to the seat of the primary growth being near the pylorus. The patient's mother had died of cancer of the throat. I dissected out the largest of the nodules, which was reported to be a carcinomatous lymphatic gland, the position of the primary growth not being determinable. At six-weekly intervals she attended the Radium Institute for one year, and thereafter at less and less frequent intervals until a year ago; the nodules disappeared under treatment. In December, 1925, the gastric symptoms, which had meanwhile been more or less chronic, were somewhat exacerbated, and early in January, 1926, the patient developed a large cold abscess on the inner aspect of the right arm, just above the elbow-joint. After evacuation it healed quickly and the gastric symptoms diminished steadily, disappearing by the middle of the following month. In December, 1927, she had an attack of bronchitis, following influenza; again, in December, 1928, an attack of bronchitis; and in February and March, 1929, bronchitis, following influenza, since when she has enjoyed uninterrupted good health. On October 5th, 1930, she was in excellent health, and there was no trace of any nodule in the neck. No treatment beyond radium and the ordinary measures to circumvent symptoms was adopted. In view of the transient notoriety of Coley's fluid in the treatment of cancer, and since the patient became rapidly well after the septicaemic abscess, I regret very much not having had cultures made from the pus.

TENNIS ELBOW.

DR. RODERIC O'CONNOR (San Francisco) recalls Mr. W. H. Trethowan's letter on tennis elbow in the *Journal* of December 28th, 1929 (p. 1218), and describes a procedure which he adopted in his own case with prompt relief. He writes: Inasmuch as the condition is the result of an overworking of the muscles involved in gripping, it seemed to me that a procedure calculated to lessen that strain was in order. Therefore I taped with adhesive the grip of my racket till it was so large that my finger-tips failed to meet by more than a half-inch. The condition, which had been present eight or nine months, disappeared in less than two weeks, never to return, although I did not stop playing. In my own case the grip was evidently too small, calling for too tight a muscle action to prevent slipping.

PREVENTION OF BLINDNESS.

A VOLUME of the *Proceedings* for 1929 of the Annual Conference of the National Society for the Prevention of Blindness gives some account of the organizations and policies which various States in America have adopted to safeguard the eyesight of their citizens. Among the subjects discussed at the conference were educational propaganda by the distribution of literature and by the establishment of diagnostic and advisory clinics; eye-testing for the school and pre-school child; safety codes in industries harmful to vision: and the co-ordination of the work of the society with that of official and voluntary agencies. In the section of social hygiene the necessity for the early diagnosis of syphilis was frequently emphasized, and the subsequent discussion provoked some decided expressions of opinion in favour of compulsory attendance for adequate treatment. Other papers included addresses on ophthalmia neonatorum and on the etiology and prevalence of trachoma, which was stated to be a serious public health problem throughout the United States. In contributing to this discussion Dr. Ernst Fuchs referred briefly to the successful treatment of trachoma in England, and advocated the introduction of effective measures in several of the southern countries, such as Abyssinia, where, he said, perhaps a half or a third of the population was affected. His own paper on the subjective symptomatology of ocular disorders is printed elsewhere.

MEMORIAL TO DR. JANET HOARE.

THE South Harrow Baptist Church has issued a public appeal for £240 to endow a bed at the Rahmatpur Women's Hospital, Palwal, India, as a memorial to Dr. Janet Hoare, who died at the hospital a few months ago at the outset of a promising missionary career. Dr. Hoare, who was 27, graduated M.B., B.S., in 1927, and became a Fellow of the Royal College of Surgeons in the same year. In 1929 she took the degree of M.D. at London University, being awarded a gold medal for gynaecology. Before proceeding to India at the beginning of this year she was house-surgeon at the Royal Free Hospital and at the General Hospital, Ashton-under-Lyne, and was associated with the Islington Medical Mission. The appeal contains many spontaneous tributes to her strength of character and generous disposition. Palwal is a small country town to the south of Delhi. In the absence of a Government medical service the Baptist Mission has provided treatment for the women of the town and district for nearly thirty years. Its work is now centred at the Rahmatpur Hospital, which has forty-two beds, and maternity and child welfare departments.

TO MEDICAL BOOK BUYERS.

ANY medical practitioners who have recently bought books from an elderly book traveller (called Mr. Harris or Matthews) are asked to communicate with either Dr. Shulman, 57, Walsgrave Road, Coventry, or Dr. Hawley, Hazelbeech, Eaton Road, Coventry.

CORRECTION.

MESSRS. BAILLIÈRE, TINDALL AND COX have asked us to point out that Dr. Ernest Nicole's book on psychopathology was erroneously described in their advertisement in the *Journal* of October 25th as "intended to fill the gap . . . between the text-books of physiology and psychopathology." Physiology should have been *psychology*.

THE *Appointments Diary* for 1931, issued by the Dental Manufacturing Company, Ltd., Brock House, Great Portland Street, W., is a handy and well-produced desk companion, intended for dentists, but equally useful in medical consulting practice. The price is 6s. 6d., postage 6d. extra.

VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 49, 50, 51, 52, 53, 57, and 58 of our advertisement columns, and advertisements as to partner-hips, assistantships, and locumtenencies at pages 54, 55, and 56.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 203.

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